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Under each piston crown is a cooling chamber, kept filled with constantly circulating oil, pumped from the reservoir through the connecting rod which this machinist is drilling.

PISTONS run cooler in a Cooper-Bessemer Diesel . . . because they are oil-cooled by a system so superior that it's tops for simplicity, efficiency and economy.

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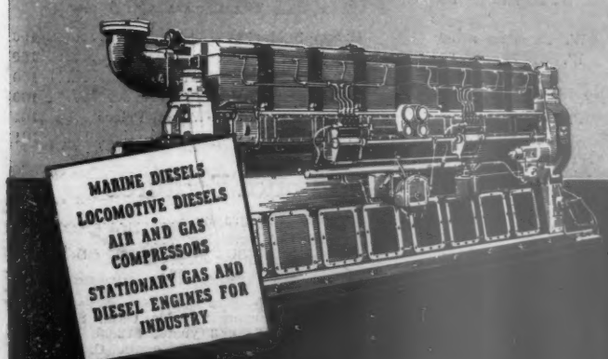
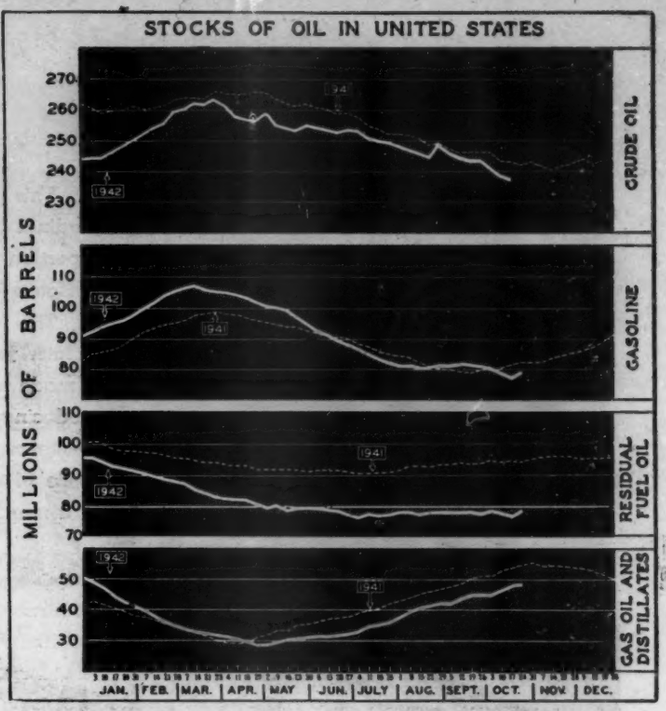


COOPER BESSEMER EST 1833

Trends

OPC Recommendation For November Less Than Assured Demand



AN operating level for November which will mean further substantial reductions in crude-oil inventories is indicated in the OPC recommendation for next month. The petroleum agency has projected a total production of petroleum liquids averaging 4,031,000 bbl. daily. Of this average approximately 3,800,000 bbl. daily will be domestic crude oil and the remainder natural gasoline and associated products.

CRUDE PRODUCTION *3,925,020 bbl. daily average—up 14,850 bbl. One year ago 4,103,950 bbl.*

CRUDE STOCKS* *238,118,000 bbl. as of Oct. 17—down 1,047,000 bbl. One year ago 243,605,000 bbl.*

GASOLINE STOCKS *79,545,000 bbl. as of Oct. 24—up 589,000 bbl. One year ago 82,390,000 bbl.*

RESIDUAL FUEL-OIL STOCKS *79,073,000 bbl. as of Oct. 24—up 536,000 bbl. One year ago 94,339,000 bbl.*

GAS OIL AND DISTILLATES *47,567,000 bbl. as of Oct. 24—up 641,000 bbl. One year ago 54,946,000 bbl.*

REFINERY RUNS *3,776,000 bbl. daily week ended Oct. 24—up 67,000 bbl. One year ago 4,071,000 bbl.*

*Last week's figure revised.

A study of what has been happening in the industry's balance of supply and demand in recent weeks reveals that the November recommendation will fall short of the assured requirements for next month. For the 3 weeks ending October 17, The Oil and Gas Journal reported a daily average domestic crude-oil production of 3,822,053 bbl. For the same period stocks of refinable crude oil decreased 4,667,000 bbl. or an average of 222,000 bbl. daily. This means that the actual demand for domestic crude oil in late September and the first half of this month was in excess of 4,000,000 bbl. daily. The data on refinery operations for the same period do not show any excess output and little change in the inventories of the principal products. In fact it is apparent that a greater production of distillates and residual fuel oils would have been desirable in order to bring stocks more in line with seasonal needs and war requirements.

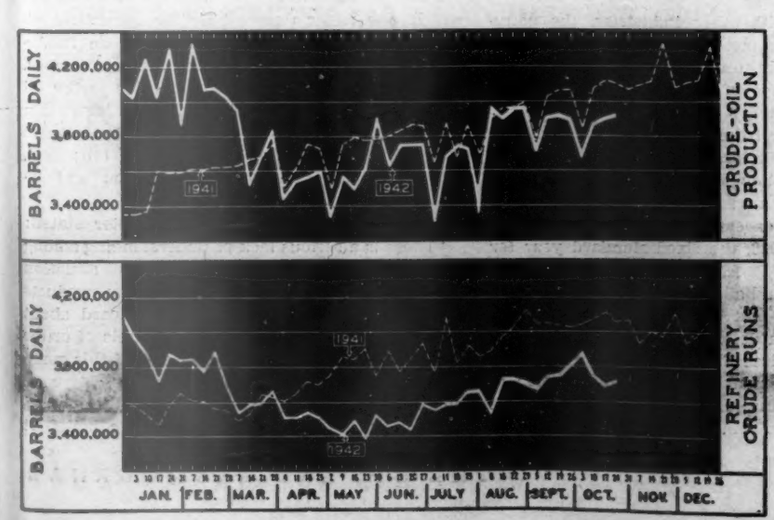
In its statement regarding the November recommendation, OPC explains that the inability to transport as much oil by tank car due to weather conditions and other developments was a factor in determining the recommended output for next month. Practically all of the decline of 34,800 bbl. daily for November compared to October is allocated to the southwestern states. It is in parts of this area that the shortage has been most pronounced. The decline in Texas crude-oil inventories for the 3 weeks ending October 17 totaled 2,101,000 bbl. or 100,000 bbl. daily, with a decrease of 1,134,000 bbl. in Oklahoma, an average daily reduction of 54,000 bbl. These data reflect the fact that in parts of the Southwest the demand for crude oil has been in excess of current output so that it has been necessary for the larger companies to draw on their storage.

DAILY AVERAGE PRODUCTION FOR WEEK

	Oct. 24 crude oil	Oct. OPC quota all oils	Oct. 17 crude oil
Arkansas	73,880	79,500	73,200
California	735,275	782,000	744,250
Colorado	6,640	7,000	6,520
Eastern fields	97,000	107,400	94,575
Illinois	264,815	280,000	256,800
Indiana	16,750	19,000	18,600
Kansas	303,900	294,000	302,900
Louisiana	327,900	337,200	326,500
North Louisiana	*97,900*	.....	*97,500*
Louisiana Gulf Coast	*230,000*	.....	*229,000*
Michigan	62,300	65,700	65,900
Mississippi	69,700	50,000	69,900
Montana	22,785	24,400	21,225
Nebraska	3,475	3,500	3,500
New Mexico	102,340	101,100	102,100
Oklahoma	364,450	417,000	364,800
Texas	1,379,800	1,407,600	1,363,800
East Texas	*362,000*	.....	*362,000*
West Texas	*210,000*	.....	*209,000*
North Central Texas	*140,000*	.....	*140,000*
East Central Texas	*97,000*	.....	*91,000*
Texas Panhandle	*85,400*	.....	*85,400*
Texas Gulf Coast	*418,000*	.....	*409,500*
Southwest Texas	*67,400*	.....	*66,900*
Wyoming	94,010	90,800	95,600
Total United States	3,925,020	4,066,200	3,910,170
Total production, January 1-October 24, 1942			1,128,227,165 bbl.
Same period last year			1,119,400,675 bbl.

Texas shutdown days, Oct. 18 and 24, previous week Oct. 11 and 17.

In regard to crude-oil stocks, economists of the industry and those in close touch with the war program are in agreement that aboveground inventories are not excessive and are needed to back up the assured military and civilian requirements over the next year. This situation has led to the conclusion that the industry will have to devise additional methods of transporting crude oil from the field to points where the crude will be required so that further withdrawals from stocks will not be necessary.



WILLIAM P. COLE, JR.

This precise summation of petroleum's inseparable position as the United Nation's cardinal war material was conveyed last week to President Roosevelt in a personal report on findings of fact by Rep. William P. Cole, Jr., of Maryland, who has headed a House committee investigating the oil industry continuously for 8 years.

The fundamental conclusion that the best way to assure oil supplies in 1944 and in later years is to thaw frozen prices sufficiently to induce exploratory drilling now is made more emphatic by Representative Cole's background. He represents a nonproducing state. His sympathies and political philosophies are inherently those of a consumer. His conclusions are predicated on the most exhaustive investigation ever made of the industry. Recommendations represent the mature, considered judgment of a man who has made it his business to learn whereof he speaks.

Cole Pleads Higher Oil Prices Essential To Assure Reserves

By HENRY D. RALPH

WASHINGTON, D. C.—Strong arguments for an immediate increase in the price of oil, as well as many sage observations about the oil industry and government regulation of it, are contained in a 10,000-word letter to President Roosevelt sent October 22 by Rep. William P. Cole, Jr., of Maryland.

Representative Cole is retiring from Congress, after 14 years of service, to accept an appointment to the U. S. Customs Court. Since 1934 he has been chairman of the petroleum subcommittee of the House committee on interstate and foreign commerce, and this letter was in the nature of a personal summary to the president in advance of the formal report which the subcommittee will make at the end of this Congress in December.

In forceful and succinct language, Mr. Cole stressed the paramount importance of the oil industry in winning the war. Most of his recommendations for immediate action doubtless will have the full support of the majority of the oil industry. The case he makes for an immediate increase in the price of oil is probably a better one than anyone in the industry has made to date.

Opinions Unbiased

Mr. Cole's letter is expected to carry particular weight with the administration. He comes from a nonoil-producing state and represents a consuming constituency in Baltimore, and so cannot be accused of serving a special interest. His years of service on the extremely important Interstate Commerce Committee have given him a reputation for fairness and scholarship. His work as chairman of the petroleum subcommittee has been objective and conservative.

A few pungent and characteristic quotations from Mr. Cole's letter to the president follow:

"While the operations of the (Interstate Oil Compact) commission have been far from perfect, it is my opinion that it has served the purpose of true conservation better than a federal statute enacted in opposition to the will of the great majority of the industry and the producing states could have done at that time."

"Our (the subcommittee's) third accomplishment, and probably our best, has been rather a byproduct of our work. I refer to the practical conservation which is in effect in the petroleum industry today, and to the great improvement in the business ethics of the industry."

"The oil business had grown up in a period of unrestrained individualism, and was controlled by a likable, venturesome, self-reliant group of men, who represent at the same time the very best and the worst in American industrial life."

"The industry is learning that ownership of a natural resource is a stewardship granted by the people."

"No kind of legerdemain or cajolery will induce practical men to invest capital where, on the average, they cannot expect to get their capital back."

"In common with other industries, the petroleum industry has met with increased labor and material costs, but unlike other industries the prices and volumes of petroleum handled have remained substantially stationary."

"Two-thirds of all the entire tonnage consumed in expeditionary forces, including their transportation and protection, is petroleum."

"Inflation has already taken place in every other commodity except oil, whose price is three-fourths that of 1926, the fixed standard year for commodities."

"It is illogical and silly to place a blanket price on oil below the cost of production, which will inevitably cause a deficiency in this product and may cause us to lose the war."

"Whoever is responsible for the production of petroleum products, and therefore responsible for our ability to win or lose the war, should have the authority to set the prices."

"This is an oil war. The art of war since the birth of Christ has been changed and molded to entirely new patterns by only two great influences, namely, gun powder and petroleum."

"For lack of foresight, the United Nations have failed in France, in Rumania, in the East Indies, and in Burma to deny this precious product to our enemies—let us not deny it to ourselves by failure to develop oil before its shortage is a catastrophe."

"The postwar period is certain to disclose the petroleum industry's internal economy disrupted, its supplies used up, its finances limited and its reserves depleted. Legislation to rehabilitate the industry will certainly be indicated."

Committee History

The first part of Mr. Cole's letter is largely a history of the work of the subcommittee, chiefly since the summer of 1939 when, at the president's request, Mr. Cole introduced an administration bill for federal control of oil conservation, a bill which was never reported by the committee although extensive hearings were held on it. Accomplishments of the subcommittee he listed as, first, collection of information relative to the oil industry; second, enactment of such legislation as the Connally "hot oil" bill, Interstate Compact authorization, and the Cole pipe-line bill; and, third, fostering voluntary conservation and cooperation within the oil industry.

Turning to current matters, the letter stated:

"There is a serious lack of understanding among both officials and laymen as to the real situation with respect to the supply of petroleum products for the conduct of war. They have heard about the estimated 18 to 20 billions of barrels of crude petroleum remaining in the oil fields of this country and have the idea that this is a 13 or 14 years' supply at our present rate of consumption.

"There is no justification for such a belief. It

will take many more than 14 years for this oil to be produced. Some of this oil will not be produced for 50 years.

"The maximum efficient production from all the wells in the country now is less than the present consumption; and since the bulk of the producing capacity is concentrated in areas far removed from the heavy consumption, the wells located closer to the consuming areas are already being called upon to produce at rates which are wasteful and which can only be sanctioned as a war measure.

"A third misconception is the belief that deficiencies in petroleum production capacity can be met by curtailing civilian consumption. It sounds so patent. It is a most dangerous error.

"The principal petroleum product consumed by civilians is motor fuel. The quantity of petroleum products needlessly consumed by civilians which could be curtailed, will have only a minor effect on the quantity of crude oil which must be refined in order to produce the essential war products.

"The War Production Board and the Office of Petroleum Coordinator have given priority assistance for materials for wildcat wells. Furthermore, they have eliminated these exploratory wells from the restrictions imposed by the orders generally applicable to the industry.

"They have further attempted to force wildcat drilling by wider spacing of the wells in producing areas and refusing priority assistance to drilling proven areas.

"This program has failed, as proven by the record of discoveries since its initiation, through no fault of the plan or of the two boards.

"Forced" Drilling About Over

"Most of such new oil discoveries as have been made, are the result of prior contractual obligations or the nearby termination of leases in which money has already been spent on purchases, rentals and seismograph work. Such 'forced' drilling is about over.

"It was a good idea but did not work because the cost of finding and producing oil is greater than the price for which it sells.

"Steps are also necessary to make feasible the continued operation, with rising costs, of stripper wells, the rehabilitation of shutdown wells, and the use of secondary operations in fields depleted by primary means.

"Those people who have considered the form which these incentives to drilling should take, suggested subsidies of one nature or another, or have suggested that proper adjustments be permitted in the prices of the crude petroleum and the petroleum products so as to adjust the various components of the industry to a proper economic balance.

"One of the subsidies suggested is to pay a bonus to any operator drilling a well which discovers a new source of petroleum. Such an offer would not be a sufficient incentive unless the amount of the bonus was disproportionately large. Those who have observed the operation of bonus system for the discovery of oil within a particular state are convinced that it would not bring about the result desired; furthermore, it would introduce certain practical difficulties of administration which would be almost insurmountable.

"As an example of this, there are areas in which exploratory wells could be drilled and in which the possibility of securing oil would be reasonably good, but the discovery would not add materially to the nation's reserves because, once discovered, unless the wells were large, the field would not be developed under the present price of crude oil.

"A second subsidy which is being suggested is a payment, by the Government, of a percentage of the cost of drilling dry holes. While this is the least objectionable in principle of the subsidies suggested, it is, nevertheless, payment for failure, bad judgment or incompetency, and subject to the further objection that an operator would be encouraged to plug and abandon small wells to secure the bonus.

"No subsidies have been suggested which will provide the incentive needed for the stripper wells, the rehabilitation and the secondary-recovery operations.

"An adjustment in the price of oil and a collaterial adjustment in the price of products is a necessary war measure to insure the drilling of wildcats, to continue production of stripper wells, to rehabilitate wells long shut down, and make possible secondary-recovery operations in many fields where the oil is needed.

"Oil is more surely a war product, and a more important one than steel, guns, armament or explosives, and we do not restrict their production by price.

"We are certainly headed towards disaster, Mr. President, if we cannot make provision at this time, for an increased supply of nearby petroleum.

"The time lapse between the search for petroleum and its use where needed, is at least 2 years.

"If we knew that one-fourth of our iron furnaces or steel mills would be out of commission within 2 years, and it took 2 years to build others, we would certainly do something about it, and do it now.

"It is not a sound administrative policy to have the direction of production, refining and transportation of petroleum products in the hands of one bureau, and the regulation of the price, which is the sole means of assuring us of these necessary products, in the hands of another bureau, who has neither the experience, nor the personnel, nor the responsibility for the production, yet in fact has complete control of the amount of production of this product through price control.

"Mr. President, I am not saying this in the name of justice to this industry. I am looking at this solely to help us win the war, and even if it were necessary to sacrifice this or any industry, or any group of individuals, to successfully prosecute the war, you would have my backing.

"I know of no other way to assure ourselves of these vital products except to remunerate the producers at least for their cost.

"The policy of our Government towards petroleum must have two viewpoints.

"First, as much the most important single product necessary to winning the war. Oil must be furnished to our armed forces, and our war industries, according to their needs, irrespective of individual inequalities, irrespective of cost, and largely, irrespective of strict conservation.

"Secondly, our policy should be, from a post-war viewpoint, wherein individual injustices are eliminated, where the public shall receive ample supplies of petroleum products at a reasonable cost, and that our proven reserves are built back up to at least 20 years' supply.

"Whichever side best supplies its armed forces with proper petroleum products, when and where they are needed, and comes nearest to denying them to its enemies, when and where needed, will ultimately win.

Lack of Foresight Costly

"For lack of foresight, the United Nations have failed in France, in Rumania, in the East Indies and in Burma to deny this precious product to our enemies—let us not deny it to ourselves by failure to develop oil before its shortage is a catastrophe.

"There are several ways that this can be accomplished.

"By the Government itself drilling—the most inefficient, uncertain and expensive.

"By subsidy—subject to endless delays and the hazards of favoritism.

"And lastly, by an increase in the price of oil, slightly above the cost of production.

"This last method is certain, is free of complications, and follows our traditional economic system.

"Under any reasonable basis of conservation, the oil fields in all parts of the United States, with the exception of the Gulf Coast, West Texas and New Mexico, are presently being overproduced with attendant waste.

"We are now producing 3,900,000 bbl. of oil per day, and it is my opinion that with additional shipping being built, and the very nearby increased demands for 100-octane gasoline, the present rate of demand will continue in spite of strict rationing.

"Our present oil consumption is now limited by our transportation facilities. Without any increase in transportation facilities, and with the present rate of drilling, within a year our consumption of

PERTINENT CONCLUSIONS IN LETTER TO PRESIDENT . . .

We will be short of oil within 2 years.

The maximum efficient production from all the wells in the country now is less than the present consumption.

Deficiencies of petroleum production capacity cannot be met by curtailing civilian consumption.

Government subsidies will not increase discoveries and production.

An increase in the price of crude oil and products is a necessary war measure.

Oil is an essential war product and cannot be considered in the category of any other product consumed by the public.

We are certainly headed for disaster if we cannot make provision at this time for an increased supply of nearby petroleum.

During the war, the oil industry should be regulated by a single federal agency with power to set prices and handle all other matters.

The 24-in. line from Texas to Illinois should be extended to New York now.

As a purely military measure the Army engineers should take charge of East Texas conservation at once and settle equities afterwards.

The Government should seize the Salem, Ill., pool and operate it for maximum production unless waste there is stopped at once.

The Government should start long-range experiments for obtaining oil from shale.

No federal legislation relating to the oil industry is needed at this time.

petroleum products will be limited by our ability to produce them instead of our ability to transport them.

"At the present rate of production, within a year, at our present rate of drilling, it will be necessary to draw upon present producing areas at a rate to cause shamefully inexcusable waste of a considerable proportion of our proven reserves of oil.

"It would be a sad commentary on national control of a natural resource if, after preaching conservation for 30 years, we should be the most guilty party in its waste.

"Our transportation system for oil to the East Coast and other points of consumption for war needs is inadequate. The burden on the railroads, under war conditions, is greater than they can continuously carry, as shown by the increasing number of wrecks, and their declining ability to transport.

"When more demands come for war oil, with transportation facilities limited, and the only big pipe line to the East starting in the field, the temptation to draw increasing amounts from East Texas will be irresistible.

"Such a procedure, without corrective measures, will cause a permanent wastage of 1,000,000,000 bbl. of good oil, already proven and completely developed. Such a short-sighted policy would be unfair to our children and immediately damaging to the war effort.

"This misfortune can be avoided by pumping back into the bottom of the reservoir an amount of fluid approaching that taken out daily.

"This has been started in an inadequate way by private enterprise.

"There are no laws to cover such situations, nor is there time to enact and put them into effect.

"I would suggest that purely as a military measure, and an emergency, the Army engineers or some other branch of the Government, undertake these operations at once and settle the equities afterwards.

"The Salem, Ill., pool, is still nearer the area of scarcity of oil in the East, and therefore, more valuable.

"This field is one of the few glaring examples of unrestrained development and exploitation of petroleum resources. It has been overdeveloped, has been, and is being, overproduced without benefit of proper state regulation and with resultant waste.

"If this condition is not quickly changed, it should be seized in toto, repressured and operated for maximum production during the war period with maximum ultimate recovery.

"Oil is desperately necessary for any armed force operating from Alaska, and even more necessary for its defense if the tides of war continue to run against us. We have neither the petroleum products available nor the tankers or tank cars for its transportation if it were available, to supply the needs of a large armed force in Alaska. If we fail to develop such a supply, or develop it too tardily, our armed operations in the Alaskan area will fail.

"California cannot now meet the demands made upon her for oil products, and if oil were delivered free of cost in drums at this end of the Alaskan Highway, it would cost $25 per barrel to haul it by truck to Fairbanks.

"Almost all of the available areas for the development of oil in the United States have already been opened up. The limit of the possible oil areas is, of course, the limit of the sedimentaries, but without going into detail, I can safely say that the sedimentary areas yet remaining and undeveloped in the United States are certain to develop only a small fraction of the oil per square mile as of those areas which have been exploited.

"The technique of deeper drilling than 10,000 ft. has been worked out by the petroleum engineers with remarkable skill, but it must not be assumed that every time you add an additional 1,000 ft. to the practical drilling depth, that you have added a tenth to the probable oil production of our country. This is due to the fact that over a vast percentage of the area the oil-producing rocks do not extend to those depths, the fields are more difficult to locate and the cost of drilling and producing, much greater.

"The combination of these facts makes it imperative that many, many years before we have a collapse of our oil productivity, we have a substitute to take the place of natural petroleum.

"We have two stupendous possible sources of petroleum.

"One—the oil shales which are widely disbursed over our country and exist in almost limitless quantities in the intermountain country.

"Second—coal, of which we have sufficient quantity for several thousand years, and which can be made a huge source of synthetic petroleum.

"Knowing the situation in which we found ourselves relative to synthetic rubber, it would appear wise to me, that at the termination of the war, the Government should build, and put into operation, pilot plants for the production of oil from these two sources.

Legislation Too Slow

"Under the pressure of war the oil picture changes so rapidly, both in the requirements on the industry and its ability to produce, that it is necessary that these problems be met as speedily as they arise.

"Legislation goes into effect too slowly to accomplish these purposes, and as oil is such a desperate and ever-pressing necessity for our war needs, I believe that the entire problem should be placed in the hands of one man, during the war period only, who has the organization available to furnish the information and to dictate the following things:

(*a*) To restrict or encourage the drilling for oil.

(*b*) To acquire under the War Production Board essential materials, strategic or otherwise, for the development of oil refining and pipe lining, in such amounts as may be designated by the armed forces.

(*c*) To set whatever prices may be necessary over the products to insure their production, processing and delivery in the needed quantities and types.

"If what I have frankly conveyed herein, reflecting my best judgment, will assist you in your great task of more effectively and speedily prosecuting the war to a successful end, then my purpose will have been served."

WPB Approves Extension of 24-In. Line to East Coast

WAR Production Board Tuesday authorized the extension of the War Emergency Pipelines, Inc., project from Norris City, Ill., to the Atlantic Coast. The decision of the board was unanimous following testimony presented by Harold L. Ickes, Ralph K. Davies and J. R. Parten.

The extension of the line will be built of 24-in. pipe to Phoenixville, Pa., with branches of undetermined size from there to New York and Philadelphia refining areas. The steel required will total between 210,000 and 220,000 tons. Part of the 24-in. pipe will be seamless and part will be of electrically welded plate.

The aerial survey made in the summer of 1941 will be utilized and field survey crews will start on the route of the line immediately. Crews for clearing ground along the right-of-way and construction crews will be moved to the northern extension of the project as soon as work is completed on the 550-mile Texas-Illinois section, where more than 350 miles has already been laid. Actual construction east from Illinois is expected to start about December 1 and the line is scheduled to be ready for operation next June.

The line will move 300,000 bbl. of oil per day. The extension will be financed by Defense Plant Corp. and it will be built by War Emergency Pipelines, Inc., according to the arrangements applying to the Texas-Illinois section.

Five Steps Proposed to Aid Industry's War Capabilities

WASHINGTON, D. C.—Five recommendations have resulted from the hearings of the O'Mahoney subcommittee of the Senate public lands committee 2 weeks ago. They are, in brief:

1. That immediate steps be taken by the Office of Petroleum Coordinator, War Production Board, and Reconstruction Finance Corp. to finance exploratory drilling on a sound financial basis under legislative authority already granted RFC. Long-term loans for not less than 5 years upon good oil-land security should be extended, particularly to the independent wildcatter who is otherwise unable to finance a drilling program.

2. Enactment of S. 2239, the O'Mahoney bill, providing a flat royalty of 12.5 per cent for a period of 10 years to persons who discover new petroleum reserves on the public domain.

3. Immediate steps to effect a more complete coordination among government agencies which have jurisdiction over oil.

4. Lacking such coordination of effort, "there should at least be an understanding between OPC and WPB whereby adequate priorities could be guaranteed for the drilling of necessary wells and the construction of necessary pipe lines."

5. Since the current demands of the Army and the Navy for war materials and the current campaign of the War Production Board for steel scrap leave no doubt that a shortage of iron and steel is in prospect, immediate attention should be given to the utilization, under the Department of the Interior, of every known process for the reduction of our own iron ores for production of more steel.

"Modern mechanized warfare depends on unlimited supplies of rubber, iron, and oil," the subcommittee observed. "We have seen the world source of supply of these materials fall into the hands of the enemy. Two years ago, most of the world's supply of strategic and critical minerals

were within the boundaries which are now the United Nations. Today the balance has been changed and, except for the United States, the Axis powers control these materials.

"After many delays and misunderstandings, we have at last launched upon a rubber program. There should be immediately undertaken an all-out iron program and an all-out petroleum program. The recommendations contained in this report would be effective steps in that direction."

Before listing its recommendations, the committee report points out that five agencies of the Government now exercise independent functions intimately affecting the production and distribution of petroleum and products. The only two that are under one head are the Interior Department and the OPC.

The other three, the report asserts, have no responsibility to the oil industry—they are the Office of Defense Transportation, War Production Board, and Office of Price Administration.

That the executive order now awaiting signature on the president's desk, appointing Mr Ickes to supreme command of all oil matters—much in the same manner as Mr. Jeffers now handles all rubber matters—is receiving definite executive consideration may be gathered from the following quote from Mr. O'Mahoney's report:

"In matters of the utmost importance to the successful accomplishment of the task imposed upon him by the president's letter of May 28 1941, establishing his office, the petroleum coordinator can only recommend or request action by these other agencies. Yet his responsibility, under the president's letter is to make 'petroleum and petroleum products available, adequately and continuously, in the proper forms, at the proper places, and at reasonable prices to meet military and civilian needs.'"

The committee praised Secretary Ickes for his achievement of a difficult task of organizing the oil industry.

"His achievement," the report said, "reflects great credit upon him personally, and upon the industry. His prime concern has been to win the war by making petroleum and petroleum products available to the armed forces. . . . Although he has made great strides towards effectively coordinating all organizations which are engaged in the production, refining, and distribution of petroleum products, the accomplishment is not as effective as it might otherwise be because government agencies outside of his jurisdiction which exercise authority affecting his task are still uncoordinated. The result is that the nation which has already experienced a crisis in steel and in rubber is now facing a similar crisis in oil."

Although Congress passed legislation providing for oil transportation by pipe line and barge as early as July 1941, they have not yet been built—neither pipe lines nor barges—because WPB has been unable to release the steel, the report continues.

The war demand for oil is certain to increase steadily, the committee gathers from the testimony made before it. Its report adds:

"The outlines of this situation were clear to this committee more than a year ago when it began its studies of the production of oil in the United States. It was because the increased demand was becoming evident that on February 2, 1942, the bill S. 2239 'to encourage the discovery of oil and gas on the public domain during the continuance of the present war' now pending before this committee was introduced. The hearings which we have had demonstrate beyond any shadow of a doubt that an immediate war need is the stimulation of the search for oil."

Stringing joints of 24-in. pipe along the War Emergency Pipelines, Inc., right-of-way is proceeding on the last third of the project which is now expected to be moving oil by the middle of January

This Week...

PRODUCTION.—National production quota for November cut 34,800 bbl.; Texas absorbs 26,600 bbl. of the reduction. OPC blames transportation for necessitating reduction. . . . M-68-5, the spacing exception order in Illinois and parts of Indiana and Kentucky, amended, OPC striving for uniform pattern. . . . Discovery well in Wyoming renews interest in eastern Colorado and corners of Nebraska and Kansas. . . . Representative Cole, retiring from House, warns president of oil shortage within 2 years, unless corrective steps are taken. . . .

PRIORITIES.—Regulation 12 amended, clarifies rerating procedure. . . . Preference Rating Plan made more stringent by amendments to Regulations 3 and 11 . . . Priority assistance revoked to much of the nonmilitary construction projects; war plants of petroleum industry unaffected. . . . Major operating supplies soon to go on allocation basis; repair and maintenance equipment to continue under P-98b or similar order, indefinitely. . . .

RATIONING.—Rubber and price administrators reject proposals for postponement of national gasoline rationing; decide November 22 is the date. . . . Special rations for occupational consumption to be curbed, drastically; all "C" cards in East Coast area subject to review. . . Driving between widely separated summer and winter homes is out for duration of rubber shortage. . . . Ration Order 11 (fuel oil), a 27-page document, issued by OPA. Basic fuel-oil ration unit fixed at 10 gal., provision made for consolidation into larger deliveries. . . .

REFINING.—Manufacturers given until November 7 to acquire title to used steel drums. . . . Contracts with Treasury Department, including lend-lease agreements, covering much of petroleum-product sales, subject to renegotiation. . . . Refiners allocated full requirements of chemicals; numerous other industries get none or, at best, small percentages of their needs. . . . Sustained domestic production of lead, plus substantial imports, eliminate shortage of this metal, eases gasoline antiknock supply, leaves chlorine the critical material. . . . Continued draft on motor-fuel stocks indicates refiners adjusting processing operations to yield desired maximum production of fuel oil. . . .

TRANSPORTATION.—Contractors working on last third of "big inch" line; Coordinator Ickes anticipates it will be carrying oil by January 15, if critical supplies are obtained on schedule. . . . Trans-Florida line to be operating early next January. . . . Rail shipments East revived, average 838,163 bbl. daily, highest since week ended September 19. . . . Six hundred carloads of domestic heating oil, other products, scheduled daily from Gulf Coast, Middle West to New England terminals, industries. . . . OPC to check results carefully, watch for benefits of experiment, attempt to improve eastern stock position. . . . Many types of industrial, construction, maintenance, farm equipment exempt from ODT Order 21, requiring Certificates of War Necessity for operation. . . .

RUBBER.—Director Jeffers attacks over optimism, says success of policy to provide tires for all essential driving is indeterminate. But Akron manufacturers are turning out large quantities of reclaimed casings. . . . OPA inaugurates steps to enable dealers to increase stocks of tires, prepare for consumer sales when mileage rationing is started. . . .

MARKETS.—Sales of gasoline in the Mid-Continent for East Coast delivery in the first quarter of 1943 reported this week. Sellers wished to test probable demand. . . . Prices on all products, particularly fuel oil steady. . . .

Oil and Automotive Engineers Exchange Views at Meeting

By W. T. ZIEGENHAIN

DESPITE the war, which is draining active men from every field, the Society of Automotive Engineers held a well-attended meeting of the Fuels and Lubricants Division in Tulsa on October 22 and 23. As might be expected, the needs of our war engines received first consideration in the technical discussions which followed the papers. Gasoline and diesel engines designed to propel fighter aircraft and tanks came up for much more discussion than the fuels and lubricants that normally feed the 28,000,000 motor cars of the country.

In this connection a highlight of the meeting was the discussion by Frank D. Klein, of Standard Oil Co. of New Jersey, of "The Use of Petroleum Products in Aircraft." A significant statement was that "Maximum efforts are being made toward the increased production of 100-octane aviation gasoline and the further improvement of values above 100 octane." He continued: "The federal Government's restrictions in the use of petroleum fractions of high-octane value in aviation-training gasoline has made it necessary for refiners to use about ½ cc. of lead per gallon in the 73-octane fuel, and about 1¾ cc. per gallon in the 80-octane. This has led to what appears to be increased corrosion among the light engines in which this leaded gasoline is used." The troubles are undoubtedly accentuated by the fact that these engines were not designed to operate on leaded fuels.

Turning then to a brief discussion of aircraft lubricants he summarized his views of the developments by saying: "Of greatest need in engine-lubricating-oil development is improved stability with consequent reduction in engine deposits. Detergent-type oils have proven effective in improving aircraft cleanliness and reducing piston-ring sticking. The use of antioxidants might be desirable in the future.

"Temperature variations have a marked effect on the properties of lubricants, so atmospheric temperature limitations incurred in aircraft are also of decided interest. As is generally known, ground temperatures between the limits of plus 110° F. and minus 40° F. are common.

"According to data on temperature of the upper air, the lower level of the stratosphere is at about 55,000 ft. over the equator and at about 30,000 ft. over the poles. Temperatures in the stratosphere vary inversely with the height of the lower level above the earth's surface, being about —120° F. over the equator, as compared with about —50° F. over the poles. Having a knowledge of these conditions under which aircraft must operate, we are in a better position to understand why petroleum products for aircraft often must vary from products suitable for ground use." Regarding the effect of changing air pressures, Mr. Klein said: "Aircraft operate under a wide range of atmospheric pressures, varying from sea level to less than one-fourth of sea level. Pressure variations influence chiefly the vapor-locking tendencies of the fuel system. Solubility of air in hydraulic oil and in aircraft-engine lubricating oil also introduces problems with wide fluctuation of atmospheric pressure."

Abstracts of several of the papers presented at the S.A.E. meeting appear in this issue, starting on Page 39.

Following the presentation of the general problem of corrosion of motor parts three comments from the floor summarized efforts to identify the cause of bearing corrosion in the crankcase as metal failure rather than corrosion caused by the lubricants. Capt. Walter L. Hardy, of the U. S. Air Force at Dayton, was one of the men so commenting and in substance indicated that greatly perceptible differences in bearing surfaces were noted between bearings made from metals of fine grain and those of course grain. Evidence had been presented among the various laboratories to suggest that metal fatigue was the cause for the loss of lead along the edges of a crystal of the metal or the entire crystal left the mass as the result of temperature changes. This was probably erroneously called corrosion.

As a further comment on the problem of bearing corrosion, two men reviewed results in their laboratories of research designed to decrease bearing corrosion by ventilating the crankcase of a standard automobile. The discussion was later expanded to apply to aircraft engines. The conclusion to be drawn from the discussion is that injecting some of the exhaust gases into the crank case materially reduces oil oxidation and where prolonged periods of flight are involved and during which relatively high motor temperatures would be reached, oil oxidation is likely to take place and corrosion follow unless the normal flow of air through the crankcase is replaced by use of exhaust gases. Naturally, many comments followed. Refiners were anxious to defend the noncorrosive findings of tests made in their laboratories and in service cars regarding specific oils and test methods, and in this discussion the merits of the 36-hour Chevrolet corrosion test and the 55-hour running test were discussed. The discussion ceased abruptly, however, when it was pointed out that if an oil under test showed corrosive tendencies after 36 hours in use, the oil had to be called "corrosive" at that time.

Another subject which drew more than normal discussion was "Re-refined Versus New Oil." In summary, it must be said that properly re-refined crankcase oil won a much better position among automotive engineers present than "reclaimed" oil, which was generally discussed at earlier meetings. It becomes apparent now that temperature is a greater factor than the source of the oil, and one man said, "If all of us had spent as much time and energy trying to hold the temperatures down in the crankcase of airplanes and automobile engines that we took in combating engine wear, we would not have many oil-corrosion problems now." This comment was a reflection of the crankcase ventilation suggestion and also tended to advance the case for re-refined oil because it was earlier said that the latter oil showed equal and sometimes greater stability than new oil when subjected to heat.

Herrington Speaks

The dinner Thursday evening, at which A. W. Herrington spoke as president of the society on the subject "War on Wheels," was both well attended and enthusiastically received. "Naturally," Mr. Herrington said, "we cannot tell all," but he did manage to give the meeting much to think about and to encourage automotive engineering.

On the second evening a debate was held between the engineers of the two Oklahoma state colleges on the subject, "Resolved, That the Two-Cycle Diesel Engine Is to Be Preferred When Compared With the Four-Cycle for Automotive Purposes." The negative was taken by the Oklahoma A. & M. team as winners but the judges' decision apparently did not settle the question for many in the audience seemed to feel the affirmative or Oklahoma University team presented the stronger arguments.

Left: H. R. Grigsby, Oklahoma Gas & Electric Co.; R. S. Burnett, standards manager, S.A.E.; T. B. Rendel, technical adviser, British Air Ministry; C. A. Tangner, Diesel Power & Machinery Co.; Hollister Moore, S.A.E.; C. B. Veal, manager, Cooperative Research Council, and W. F. Lowe, chairman Tulsa group, S.A.E. Right: F. A. Suess, Continental Oil Co.; B. E. Sibley, Continental Oil Co.; J. H. Baird, Lubri-Zol Corp.; C. M. Larson, Sinclair Refining Co.; Dr. T. A. Roger, Shell Development Co.; C. W. Georgi, Quaker State Oil Refining Co.; Leonard Raymond, Tide Water Associated Oil Co., and J. J. Mikita, Texas Co.

Allocation Control Probable On Major Operating Supplies

This abstract of an address delivered at the annual meeting of the Independent Petroleum Association of America at Wichita, Kans., last week and repeated in substance at several other Mid-Continent operating centers furnishes a general outline of what the industry may expect in the regulated distribution of equipment and supplies for the next several months.

In general, Mr. Orton foresees a continuation of the PRP for manufacturers and fabricators and retention of P-98b, or a similar order, for repair and maintenance supplies. Major-tonnage equipment will be shifted to an allocation basis with the end-product use determining the preference assistance obtainable.

By GREER W. ORTON
Director of the Materials Division,
Office of Petroleum Coordinator

THE materials requirements of the oil industry assume enormous proportions. For example, on the basis of figures prepared covering oil operators' expenditures for materials and operating supplies during 1941, on a going concern basis and including drilling and an average amount of new-plant construction, such expenditures were found to approximate 850 million dollars. Three hundred and fifty million dollars referred to production, 376 million dollars to refining operations, 36 million dollars to transportation and pipe-line operations, and 76 million dollars to marketing and distribution. While these figures are approximations they do portray the enormous magnitude of the industry's requirement. In the case of production, natural gas and gasoline the largest requirements consisted of tubular goods, which amounted to approximately 192 million dollars; for refining, chemicals represented approximately 138 million dollars. Naturally, in the case of transportation, pipe represented the largest item and approximated 21 million dollars. For marketing, service station, bulk plant and distributing equipment, and materials and supplies represent the largest item—approximately 27 million dollars.

Notwithstanding the fact that we can all appreciate the necessity for curtailing considerable materials requirements during the present period, there is a limit to which reduction can be made without unduly impeding the prosecution of the war.

Given the right kind of personnel and in sufficient numbers the proper functioning of the Materials Division becomes a matter of office procedure and routine. In the reorganization which we have passed through recently provisions have been made for a good liaison relationship with the various branches of the War Production Board, so that we may know that we are performing our work in keeping with its policies, rules and regulations. Provisions have been made for an expediting service so that applications for projects, as well as PD-1A and P-98b applications might be handled to conclusion expeditiously after they leave the Materials Division itself.

A processing group, corresponding to the production line method, has been established and while it only started functioning recently the results shown to date are most gratifying and within a relatively short time PD-1A and P-98b applications should clear the OPC within 24 hours from the time they are received.

In the plan of new organizations, facts and figures are to play an important part. Now that we are passing into an era of allocations, it is even more essential than ever before that facts and figures are readily available covering both past requirements as well as future needs of materials and equipment.

The Production Requirements Plan will continue through the fourth quarter of this year and the first quarter of next year, for manufacturers and fabricators of metals and metal products. Operators, however, will not be required to come under the plan since the War Production Board has agreed that no essential useful purpose would be served by them doing so.

Present indications are that operators will function under a system of allocations for their major-tonnage materials requirements. Allocations constitute a direct approach to the problems at hand. For example, the principles underlying allocations are divided into three parts; first, the determination of the job to be accomplished, or in other words the products to be produced; second, the materials required to do the job; and third, the sources from which such materials con be obtained, that is, either from inventories or from outside or manufacturing sources, provided of course the job is sufficiently important to warrant the diversion of manufacturing facilities from war materials.

Refineries Under Allocations

As most of you know, the construction section of the Refining Division, under Max B. Miller, has in fact been operating under a system of allocations since the spring of this year for obtaining steel plate and a few other larger items of critical material required in the construction of war plants such as 100-octane and related facilities. This system has proved its merits and has been found far superior to the use of priorities alone, because, if you will remember, there was a time when a "preference rating" as far as steel plate was concerned amounted to nothing more than a hunting license.

As we progress further along the lines of allocations, circumstances will necessitate the formulation by the various divisions of the Office of Petroleum Coordinator, of an over-all end-product requirements program.

The establishment of this program and its conversion into materials requirements to carry it out should remove many of the uncertainties now existing in Washington circles.

Since the allocation system does not lend itself to the handling of repair, maintenance, and operating supplies, as well as smaller equipment and fabricated items, it is necessary that some other procedure be utilized to insure the steady flow of these materials to users. In the case of operators, we have been assured that some preference rating order procedure similar to that now involved in P-98b will continue after the first of the year.

Based on a survey of inventories on June 30 and requirements for the fourth quarter of 1942, as compiled during August, requirements of carbon steel for the fourth quarter were found to be approximately 641,000 tons. We were given an allocation by the War Production Board of 292,000 tons, 45 per cent. Alloy-steel requirements were shown to be 38,500 tons and we received an allocation of 2,500 tons, 8 per cent. Copper and copper-base alloy requirements were found to be approximately 5,400,000 lb., 42 per cent. These allocations include materials for war plants and pipeline projects.

Inventories to Be Liquidated

Inventories will be drawn on very heavily to make up the deficit between requirements and allotments. For example, the oil industry's carbon-steel inventories on June 30 represented 1,300,000 tons, alloy-steel inventories 63,500 tons, copper and copper-base alloy inventories 10,300,000 lb. Notwithstanding the quantities in inventories, an unbalanced condition is known to exist. This fact and the reduced quantities allotted will necessitate considerable curtailment in quantities of materials used, and the elimination completely of all nonessential uses and operations.

You, as users of materials, in the final analysis, are in the best position to determine what is essential and what is nonessential. We in Washington cannot possibly be purnished with sufficient data surrounding these applications to insure 100 per cent accuracy in the decisions which we are forced to make.

Therefore, in looking into the future, I believe it might be said that we are attempting to organize ourselves properly so that we might substitute definite action and "yes" and "no" answers for such indecision as has existed in the past; that we will soon be well into an allocations procedure covering major items which will necessitate the establishment of materials and equipment requirements for advance periods; that fabricators and suppliers will continue to operate under the Production Requirements Plan or PD-1X procedure in perhaps a modified form; that operators will continue to use a general preference rating, similar to the P-98b even after the first of the year; that the petroleum branch of the War Production Board, namely, the Materials Division of the Office of Petroleum Coordinator and other commodity branches will become more or less self-sustaining units and, as a result, a considerable portion of the red tape, delays, and necessity for contacting numerous agencies in clearing materials applications will be largely eliminated, in comparison to what it is at the present time.

STATE CAPITALS...

State Production Quotas Reduced

WASHINGTON, D. C.—Production quotas for oil states in November were fixed last week by the Office of Petroleum Coordinator at 4,031,400 bbl. daily, a reduction of 34,800 bbl. from the certified rate of withdrawals in October.

OPC District 3 suffered most of the reduction, although there were substantial adjustments of the individual state quotas in other sections of the country. District 3, including Arkansas, Louisiana, Mississippi, New Mexico, and Texas, was assigned a daily quota of 1,942,600 bbl. in November, a decrease of 32,800 bbl. from the October allowable. Texas' quota was cut 26,600 bbl. to a November allocation of 1,381,000 bbl. daily. Arkansas' quota was lowered 2,300 bbl.; Louisiana was cut 3,400 bbl., and New Mexico 500 bbl.

A reduction of 5,000 bbl. in the daily quota of producing states in District 2 fell hardest on Oklahoma and Kansas received the most substantial upward adjustment. Kansas was authorized to produce 300,700 bbl. daily in November, an increase of 6,700 bbl. Oklahoma's quota of 407,500 bbl. daily next month is 9,500 bbl. below the October rate certified by OPC. Michigan's quota was cut 1,200 bbl., Ohio was reduced 1,000 bbl., and Indiana was cut 600 bbl. daily.

Wyoming, assigned a total quota of 94,400 bbl. daily during November, an increase of 3,200 bbl., was the only state to receive a substantial raise. Montana's quota was increased 400 bbl. daily. The California quota of 782,000 bbl. daily in October was left unchanged for next month.

"Weather conditions, diversion of some petroleum tank cars to other services, unusually heavy traffic on the railroads, and other factors have prevented the railroads and the oil industry from maintaining the record shattering tank-car movements attained during September," Deputy Petroleum Coordinator Ralph K. Davies, said. "Consequently, it will be impossible at present to count upon moving as much oil out of the Southwest as heretofore. While the temporary reduction in the number and speed of tank-car trains continue, production in the Southwest must be curtailed."

RECOMMENDED PRODUCTION RATES

District and state—	Barrels daily— November 1942 total petroleum liquids	October 1942 total petroleum liquids	November 1941 total production petroleum liquids
District 1:			
New York	15,100	15,400	13,800
Pennsylvania	50,500	50,800	47,000
West Virginia	15,600	16,000	14,600
District 1 total	*81,200*	*82,200*	*75,400*
District 2:			
Illinois	280,900	280,000	408,600
Indiana	18,400	19,000	16,300
Kansas	300,700	294,000	253,900
Kentucky	13,600	13,800	12,800
Michigan	64,500	65,700	57,100
Nebraska	3,400	3,500	4,800
Ohio	10,400	11,400	9,700
Oklahoma	407,500	417,000	451,600
District 2 total	*1,099,400*	*1,104,400*	*1,214,800*
District 3:			
Arkansas	77,200	79,500	74,600
Louisiana	333,800	337,200	364,100
Mississippi	50,000	50,000	74,700
New Mexico	100,600	101,100	116,900
Texas	1,381,000	1,407,600	1,583,200
District 3 total	*1,942,600*	*1,975,400*	*2,223,500*
District 4:			
Colorado	7,000	7,000	6,300
Montana	24,800	24,400	21,800
Wyoming	94,400	90,800	81,000
District 4 total	*126,200*	*122,200*	*109,100*
District 5:			
California	782,000	782,000	688,700
Other	.....	.....	200
Total United States	*4,031,400*	*4,066,200*	*4,311,700*

TEXAS

DAILY AVERAGE PRODUCTION of approximately 1,306,000 bbl. will be authorized in November under provisions of the state-wide proration order promulgated by the Railroad Commission. The schedule was expected to provide for 21 general producing days, 23 in the Panhandle and 27 in preferred fields yielding high octane crudes. The Office of Petroleum Coordinator certified a daily quota of 1,381,000 bbl. daily to the Texas commission, including natural gasoline and recycle condensate.

EXTENSION OF DISCOVERY ALLOWABLES for a total period of 18 months, an increase of 6 months, was proposed last week by Olin Culberson, member of the Railroad Commission, as an incentive to operators to intensify exploration.

"On the basis of a 5,000-ft. well," Mr. Culberson explained, "this plan could authorize the production of 54,000 bbl. in 18 months which would permit a payout not to exceed 6 to 8 months and leave the operator a substantial profit."

BEAUFORD H. JESTER, of Corsicana, will become chairman of the Railroad Commission January 1, 1943, at which time he will have served on the regulatory body for about 4 months. Mr. Jester became a member of the commission after his election in the runoff primary, filling the unexpired term of Jerry Sadler. Regular term of the office now held by Mr. Jester expires in 1944 and his promotion to the chairmanship during 1943 follows recent precedent whereby the commission member next up for election becomes the chairman.

APPOINTMENT OF JIM BASKIN as chief of the Railroad Commission's Oil and Gas Division, succeeding Clinton Owsley, was announced last week at Austin. Mr. Owsley becomes chief statistical clerk of the division, the office formerly held by Mr. Baskin. Other changes in personnel are anticipated.

ARKANSAS

APPLICATION FOR AN EXCEPTION under Conservation Order M-68 for the development of the Texarkana gas-condensate pool, Miller County, has been filed by the Oil and Gas Commission with the Office of Petroleum Coordinator. The commission has applied for authorization to develop the field on the basis of one well to each 160 acres rather than on a spacing pattern of 640 acres.

The Texarkana field, discovered in September, is estimated to contain 30,000,000 bbl. of condensate associated with in excess of 350,000,000,000 cu. ft. of natural gas.

"Applicant," the petition to OPC states, "believes that the pool can furnish when developed, 1,600 bbl. of 70-gravity distillate, 15,000 gal. of natural gasoline, butane, propane together with 50,000,000 cu. ft. of natural gas each day."

It is estimated that 15 wells will be required to develop the structure probably centering around the discovery which is 660 ft. south and east of the NW C SE NW 3-16s-28w. The petition sets out the casing requirements for each well as follows: 100 ft. of 13⅜-in.; 2,500 ft. of 9⅝-in.; 7,550 ft. of 6-in. and 1,000 ft. of 3-in. line pipe for lease purposes.

OKLAHOMA

RESTRICTIONS ON GAS production in the Cement field, Caddo County, will be proposed at a hearing next month. The Corporation Commission is now directing the accumulation of pertinent data. Operators in the Cement field conferred last week with Joe J. O'Loughlin, chief conservation officer, and agreed on the scope of regulations to be covered in the new order.

Regulations will cover these points: Ratable taking of gas; methods of determining potentials and conservation in handling and production of the gas.

The OIL AND GAS JOURNAL

PRODUCING REFINING NATURAL GASOLINE PIPE LINE

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The Independent's Position

Several hundred operators who have first-hand information regarding many of the wartime problems of the petroleum industry met last week in Wichita as members of the I.P.A.A. and affiliated organizations. They got together to discuss what they can do now and later in furthering the war plans as producers of an essential raw material.

In this large group there are a few who have had exceptional success in finding and producing crude oil. Instances can be cited in which accomplishments by individuals, partnerships, or small companies have become the nuclei of some of today's largest units. It is equally accurate to point out that the financial returns of these exceptions have more than been offset by losses of a far larger number whose search for oil was rewarded with unprofitable operations.

Between these extremes is the independent producing industry which has continued in good and bad times since the Drake well. Their methods of operation are comparable in many respects to those of small enterprises throughout the country. They know their regular employes by their first names; they pay their taxes and purchase equipment and supplies with their own checkbooks. They have a working knowledge of every phase of their field operations.

Collectively these operators account for a substantial part of the crude-oil production and normally they find tens of millions of barrels of new oil yearly.

Right now they are concerned as to how they will maintain present operations and do the necessary exploring so that they will be able to do their part throughout the emergency. Usually they establish new reserves close to existing operations where they have had the opportunity to study geological conditions and where large capital expenditures are not necessary to determine the possibilities of undrilled areas. They are also familiar with the engineering developments which will enable them to recover additional oil from old fields and they have done the pioneering in some of this work.

But to them the economics of what they can do in exploration and development is not a theory but a reality that strikes home immediately and directly. They can expand and explore only as the returns from existing operations justify.

They do not want governmental subsidies. They have seen what subsidies mean in other lines of activity. Their independent heritage, which in many cases goes back two and three generations, rebels against a program of gratuities which they know will not do the job regardless of how they are applied.

They can see nothing wrong with the industry's practices of the past. The cure for a crude shortage has always been a price rise which will justify whatever has to be done to find new supplies. With higher schedules they will be able to carry on secondary-recovery operations which will bring additional oil with a minimum outlay of war materials. The Government with its war taxes will be the principal beneficiary should a few be in a position to expand net incomes.

Right now their situation is particularly critical. In many instances producers must have better prices to maintain present operations where every cost has mounted while prices continue at prewar levels.

All this and more was clearly revealed in the reports and discussions at Wichita where there was agreement that the maintenance of petroleum supplies largely revolves around an adequate return for existing production and more materials for new operations. Independent operators can best serve the petroleum industry and the entire nation by making this simple fact so clear that certain agencies at Washington will understand and act accordingly.

Uniform Spacing Pattern Is Provided By M-68-5 Changes

WASHINGTON, D. C.—An amendment to Supplementary Conservation Order M-68-5 issued here October 23 clarifies the spacing patterns for oil wells drilled in sand fields in Illinois and portions of Indiana and Kentucky.

The order was amended so that uniform patterns would be maintained in the areas affected by M-68-5 which allows closer spacing of wells than previously permitted under M-68.

The amended order affects the drilling of wells in all of Illinois and in the following Indiana and Kentucky counties. Indiana: Clay, Daviess, Dubois, Gibson, Greene, Knox, Martin, Perry, Pike, Posey, Spencer, Sullivan, Vanderburgh, Vigo and Warrick. Kentucky: Breckinridge, Butler, Christian, Daviess, Grayson, Hancock, Henderson, Hopkins, Ohio, Logan, McLean, Muhlenberg, Todd, Union and Webster. The amended order defines the conditions under which wells may be drilled to sand formations at depths not more than 2,500 ft. and at depths greater than 2,500 ft.

Basic priority provision in the original M-68-5 requiring that "the tubing and casing (other than the surface pipe) required to drill complete or provide additions to such well is on hand or is obtained without the use of priorities assistance."

As to any well drilled or completed in the specified area at a depth of not more than 2,500 ft., the amendment lays down the following limitations:

Such well is drilled within 30 ft. of the center of a drilling unit consisting of a quarter of a quarter-quarter section upon which quarter no drilling or producible well other than such well is or is to be located: *Provided*, That where any other well has been located either approximately in the center of a quarter-quarter section (attributable solely to such well) or in the center of half of a quarter-quarter section (attributable solely to such well), such other well shall be deemed to have been drilled on an adjacent quarter of a quarter-quarter section.

The proposed drilling unit upon which such well is or is to be located consists entirely of acreage which is not attributable to any drilling or producible well (located within the same lease or property) other than such well; (the acreage attributable to any well spudded subsequent to December 23, 1941, which offsets such well and is drilled to a depth of not more than 2,500 ft., shall be the quarter of a quarter-quarter section upon which such offset well is located. The acreage attributable to any well spudded subsequent to December 23, 1941, which offsets such well and is drilled to a depth of more than 2,500 ft., shall be the one-half of a quarter-quarter section (north, south, east, or west halves) upon which such offset well is located. The acreage attributable to any well spudded on or before December 23, 1941, which offsets such well, shall be determined by assigning to such offset well an acreage equivalent to that in the existing well density or drilling pattern contiguous to such offset well).

All separate property interests in the proposed drilling unit shall have been consolidated prior to the actual commencement of operations at the designated drilling location of such well;

Such well is drilled at least 330 ft. from any lease line, property line, or subdivision line which separates unconsolidated property interests; and

As to any such oil well which is drilled or completed at a depth of more than 2,500 ft.; such well must be drilled on a unit of not less than one-half of a quarter-quarter section (north, south, east, or west halves) upon which no drilling or producible well other than such well is or is to be located.

Other specifications on consolidation of property interests, spotting of the location within 30 ft. of the center of the drilling unit are the same for wells below 2,500 ft., as for shallow wells, except that they apply to a quarter-quarter section in all instances instead of to the 10-acre tracts, and the distance between wells must be not less than 725 ft.

Increase in Motor-Trucks Use Helps Cushion Gasoline Drop

WASHINGTON, D. C.—Another reason why actual motor-fuel consumption has failed to decline as rapidly as civilian rationing would otherwise indicate was disclosed here last week with the monthly report of the American Trucking Associations, Inc., for September.

The volume of freight transported by motor carriers in September increased 4.3 per cent over August and 7 per cent over September 1941, the association reported.

Comparable reports were received by the association from 204 motor carriers in 40 states. Reporting carriers transported an aggregate of 1,534,065 tons in September against 1,471,521 tons in August and 1,433,557 tons in September 1941.

Transporters of petroleum products, accounting for about 10.5 per cent of the total tonnage reported, showed an increased of 15.2 per cent over August and held a gain of 66.3 per cent over September 1941.

OPA Establishes Regulations Controlling Use of Fuel Oil

DETAILS of the methods by which the limited stocks of fuel oil will be allocated to assure adequate supplies for essential heating, industrial and other purposes were made public in Washington last week by Price Administrator Leon Henderson with issuance of the formal fuel-oil rationing regulation.

Major provisions of the measure, titled Ration Order 11, fuel-oil rationing regulations, curtail the use of fuel oil in the 30-state rationed area, set forth the maximum amounts which may be used for domestic cooking, lighting, and hot water, restrict fuel oil use for heating any premises, including apartment houses and other multiple dwellings, and bring under strict control fuel oil used for commercial and industrial purposes.

The range of petroleum products covered by the order includes standard grades of residual fuel oil, commonly used for industrial purposes, distillate oil, the type normally used for heating; diesel oil, kerosene, range oil and gas oil.

Should Secure Applications

Fuel-oil rationing for homeowners, in effect, has been under way since October 1 as stocks on hand as of that date will be deducted from the individual's ration when it is issued by the local board on application filed before November 1.

In view of the method by which rations are completed and in view of the restrictions on use of fuel oil contained in the regulations, it is important that applications be made before November 1 in every possible case. Dealers can secure applications for their consumers at each local board now. Any user who does not receive an application from his dealer may get the form at his board.

With very few exceptions, the regulations curtail fuel-oil use only for heating and hot-water purposes. The formula curtailment is 33⅓ per cent. Actually, each individual curtailment will vary greatly depending upon the thermal efficiency of the premises. The minimum cut is 15 per cent. Fuel oil uses for industrial purposes, such as for operation of machinery, are controlled but not curtailed.

The methods of curtailment vary in accordance with the purpose for which the fuel oil is used. The heat ration for private dwellings or other premises, for example, is established on a flexible basis so that adjustments may be made during coming months for abnormal weather conditions, while the ration allowed for hot water alone, which does not vary to any considerable degree with weather conditions, is fixed by definite gallonage allotment.

After November 1, no primary supplier inside or outside the rationed area and no dealer or secondary supplier within the limitation area may transfer fuel oil to a consumer except in exchange for coupons, delivery receipts, or acknowledgments of delivery equal in gallonage value to the amount of fuel oil transferred. Dealers and suppliers must attach the coupons received from consumers to a coupon sheet form. These coupon sheets may be delivered by suppliers to the local rationing board which will issue in return for the coupons, an exchange certificate equal to the gallonage value of the coupons or other evidences delivered.

The order requires that primary suppliers must forward to the control and audit unit, Fuel-Oil Rationing Branch, OPA, Washington, D. C., on or before the twenty-fifth day of each month, beginning November 25, a report showing the amount of fuel oil transferred by him within the limitation area as well as oil transferred to consumers outside the limitation area, and attach coupons, exchange certificates, or other evidence equal in value to the amount of oil transferred during the preceding month.

The order prohibits after November 1 the transfer of any fuel oil from within the rationed area to any point outside the limitation area, with the exception that dealers or suppliers may distribute oil to a consumer outside the area in exchange for coupons or other evidences. Primary suppliers may apply for special permission in cases where they can show significant transportation saving.

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4 Spacing band centers glass and prevents contact with metal.

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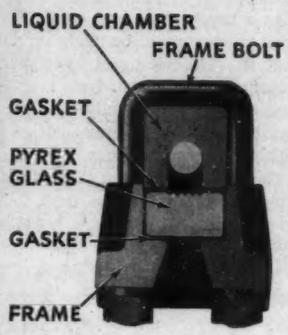

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OPC Schedules 600 Tank Cars Of Fuel Daily to East Coast

WASHINGTON, D. C.—The through scheduling of 600 carloads of home-heating oil and other refined petroleum products daily, direct from Gulf Coast and midwestern refineries to New England terminals and industries was announced last week by Petroleum Coordinator Ickes.

Agreement to ship this number of cars each day in solid trains was reached in meetings in New York last week between representatives of the oil industry and the Transportation Division of OPC.

As a result, nine and one-half trainloads of refined products will be made up daily at the larger western refineries and consigned direct to the principal terminals in New England. Some of the movements have already been started and the remaining trains are expected to be in operation within the next few days.

The schedule agreed upon is shown in the accompanying table.

In addition, 200 tank-car loads have been scheduled to move daily—in three solid trains—from the Gulf Coast to terminals near New York.

Shipments of refined products have not up to now been handled on a through-train basis from point of origin to New England. Only crude-oil shipments have been handled on this basis heretofore. The practice in connection with refined products movements has been to break up trains at the railway gateways into New England and to move the cars on in smaller lots to scattered destinations.

It is expected, Deputy Coordinator Ralph K. Davies said, that the through scheduling of trains will cut at least 2 days from the time it takes a tank car to make the round trip from refinery to New England receiving terminal and return.

OPC plans for supplying new England's requirements during the coming few months contemplate the daily arrival in that area of approximately 1,300 tank cars, including at least the 600 scheduled to move in the through-products service and 250 in crude-oil service. The balance will continue for the present to move in broken lots direct to consumers and to small terminal points incapable of handling trainload shipments.

SCHEDULE OF THROUGH OIL TRAINS TO NEW ENGLAND

Trains daily	Oil products	Origin	Shipper	Destination	Cars per day
1	No. 6 residual	Whiting, Ind.	Standard (Indiana)	Everett, Mass.	50
1	Light fuel	East Chicago	Sinclair	Everett	50
1	Mixed fuel	Port Arthur	Texas Co.	Everett	70
1	Mixed fuel	Port Arthur	Texas Co.	Boston, Mass.	70
1	Mixed fuel	Port Arthur	Texas Co.	Boston	70
1	Mixed fuel	Houston	Shell	Boston	70
1	Mixed products	Texas City	Pan American	Portland, Maine	70
2	Mixed products	Beaumont	Magnolia	Providence, R. I.	125
½	No. 6	Port Arthur	Gulf	Direct to NE industries	25
		Trains to New York Harbor			
1	Mixed products	Houston	Sinclair	Tramley Point, N. J.	60
1	Mixed products	Texas City	Pan American	Carteret, N. J.	70
1	Mixed products	Port Arthur	Gulf	Gulf Port,, S. I.	70

Specific Prices for Distillate Fuel Established in Michigan

WASHINGTON, D. C.—Temporary dollars-and-cents maximum prices for kerosene and other distillate fuel oils produced in Michigan and for those products produced elsewhere and shipped into Michigan for sale were established October 23 by the Office of Price Administration.

Ceilings on shipments to points within 35 miles of the refinery in Michigan where the oils are produced are fixed at the level set by previous provisions of Revised Price Schedule 88 (petroleum and petroleum products). Under these prices the refinery receives a net-back (price at refinery) approximately the same as it received on those sales during the base period under the schedule.

Maximum prices for shipments beyond the 35-mile radius are established at approximately 0.5 cent per gallon below the ceilings set for local shipments.

Where distillate fuel oils are shipped into Michigan from refineries outside the state, the price amendment provides that the laid-down cost in Michigan on these shipments will not exceed the laid-down cost of those products when produced in Michigan. The maximum price at a given destination on shipments from outside the state is fixed at the maximum f.o.b. price of the Michigan refinery or terminal nearest that destination point plus rail freight from that refinery or terminal.

The new specific prices are established by Amendment 35 to the Petroleum Schedule (No. 88), effective October 28. They follow:

For shipments destined to points within 35 miles of refinery or terminal:

	Cents per gal.
47-49 gravity w.w. (kerosene)	0.6
P.W. distillate (high-grade fuel oil)	5.5
No. 3 gas oil, straw	5.0
U.G.I. gas oil	4.5

For shipments destined to points beyond the 35-mile radius:

47-49 gravity w.w. (kerosene)	5.5
P. W. distillate (high-grade fuel oil)	5.0
No. 3 gas oil, straw	4.5
U.G.I. gas oil	4.5

War Council Shifts Next Month's Meeting to Chicago

WASHINGTON, D. C.—Petroleum Industry War Council officials here are making preparations for the first meeting of the council to be held outside Washington. The November meeting is scheduled to be held at the Palmer House, Chicago, November 9 and 10, with the usual committee meetings to be held on Sunday, November 8.

Reason for changing the meeting place from the capital, and moving it from the traditional "first Tuesday of the month" is twofold: first, the regular meeting date would prevent members from voting in their local elections; second, holding the meeting in Chicago will permit PIWC members to meet and discuss industry problems with a broader segment of the industry, since the A.P.I. annual meeting is to be held in Chicago the same week.

Coordinator Ickes is expected to attend both meetings.

Railroads Move 838,163 Bbl. of Oil Daily to East Coast

WASHINGTON, D. C.—Tank-car shipments of oil to the East rebounded to 838,163 bbl. a day during the week ended October 17, up 71,753 bbl. from the previous week's average.

By loading an average of 3,953 tank cars daily, petroleum shippers checked a 3-week decline in the rail movement of oil to the East.

In shipping 838,163 bbl. of oil each day last week, 39 companies reported loading 27,675 cars. This is nearly 40 per cent of the 70,576 tank cars now counted in East Coast petroleum service.

Price Advance on Part of Lima Crude Oil Authorized

WASHINGTON, D. C.—The Office of Price Administration October 27 issued an amendment to Price Schedule 88 permitting price adjustments on much of the crude produced in the Lima field of northwestern Ohio and northeastern Indiana, "to halt premature abandonment of the wells and thus insure continued supply of low-cost fuel oil produced from this crude."

Price of about three-quarters of the field's production was increased 25 cents per barrel, that is, to a maximum of around $1.50. OPA said, in announcing the increase, that cost of producing this crude has been found to be around $1.50 and that undue abandonment of wells before exhaustion is already taking place.

The one-fourth of the field's production not covered by the new order is priced at $1.60 now.

Fuel-Oil Conversions Lag Behind OPC Objectives

WASHINGTON, D. C.—Concern over the sharp drop in the number of industrial fuel-oil conversions being made on the Atlantic seaboard was expressed last week by the Office of Petroleum Coordinator.

"More heavy oil must be saved through conversions," Coordinator Ickes said. "Our present conversion goal for the saving of heavy fuel oil on the Atlantic seaboard is 40,000,000 bbl. annually. The 40,000,000-bbl. goal is not an arbitrary one. It is based on a survey made by OPC of all residual fuel-oil consumers in the East Coast area.

"Only 25,000,000 bbl. of this volume has been converted to date, and most of these conversions were completed last summer and early this fall. Very few conversions have been made during recent weeks.

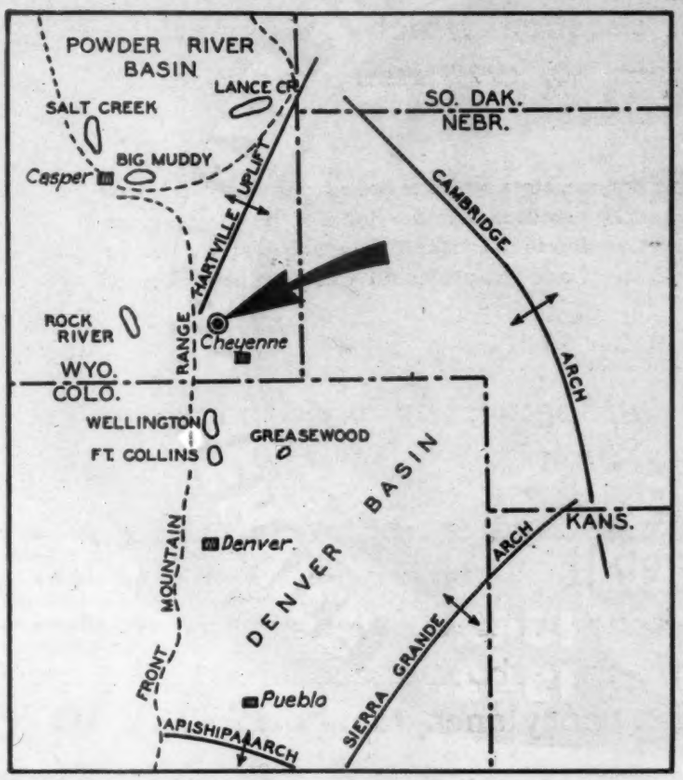
"While the cooperation of East Coast industries was very encouraging at the start of the campaign," Coordinator Ickes continued, "much of the job is still to be done. To do it effectively and to continue on a voluntary basis, it is necessary for industries using heavy fuel oil to understand that neither this office nor the Army and Navy knows what the day-to-day heavy fuel-oil demands will be on the East Coast. This war is making most unusual demands upon the entire petroleum industry."

Wyoming Discovery Directs Attention to Lakota Sand

By T. R. INGRAM

DENVER, Colo.—The discovery reported this week in the General Petroleum Corp.'s wildcat on the Horse Creek structure, Laramie County, southeastern Wyoming, not only opens a new pool giving evidence of being of major importance, but paves the way for more activity in adjoining areas in three states. The well, 78-31-G, SW SE SE 31-17n-68w, is located 24 miles northwest of Cheyenne, the nearest city; 45 miles due east of the Quealy field in Albany County; 115 miles south and a little west of Lance Creek, all in Wyoming; and 50 miles north of the Wellington field in Colorado. A discovery located these distances from producing fields ordinarily will open a large area for prospecting, but in this instance it directs attention to a far greater area to the east in southwestern Nebraska and northeastern Colorado as well as in southeastern Wyoming.

The elevation of the well is 6,780 ft. above sea level. The unofficial record shows that it logged the top of the Dakota at 5,265 ft. and cored to 5,290 ft. There was no recovery in the first 5 ft. and from 5,270 to 5,290 ft. the cores showed some saturated sand containing a little lime. The packer was set at 5,254 ft. for a drill-stem test and this showed drilling mud with some cut oil. Coring then was resumed and the Lakota sand was picked up at 5,451-89 ft. and at the last-named depth it ran into green shale, at first believed to be the top of the Morrison. Another drill-stem test at 5,490 ft. yielded 27 bbl. of oil in 30 minutes. Upon resuming it picked up more Lakota sand after going through the thin break. This sand continued to 5,510 ft. Drilling then continued to 5,531 ft., the total depth. This time the packer was set at 5,490 ft. and from the lower 20 ft. of sand it made 15 bbl. in 1 hour. Altogether there were 58 ft. of Lakota sand, the thickest sand in that formation so far found in this area. The 7-in. then was run and preparations made for drilling in the well and testing. The first samples of crude, probably from the Dakota, showed for 38-gravity A.P.I. scale.



Location of discovery indicated by arrow on above map

Significant Location

While the indications are that it has opened a major pool, its areal location is of great significance. It is on the northwestern rim of the Denver (some times called the Julesburg) basin, which takes in most of eastern Colorado north of Pueblo, and embraces the southwestern corner of Nebraska. The western boundary of the Denver basin is formed by the front mountain range running in a general northerly direction west of Pueblo, Denver, and Cheyenne and then farther north turns due west, passing a little to the south of Casper. The southern boundary is formed by the Sierra Grande arch which runs in a southwest-northeast direction through southeastern Colorado, passing through the extreme northwest corner of Kansas into Nebraska. Running in a nearly west-east direction from the front mountain range to the Sierra Grande arch, immediately south of Pueblo, is another uplift called the Apishapa high. The eastern and northeastern boundary of the Denver basin is marked by the Cambridge arch running through western Kansas and Nebraska toward the Black Hills uplift on the northwest. The northwestern boundary of the basin is formed by the Hartville uplift which starts to the west of the discovery well and trends in a northeasterly direction toward the Black Hills uplift.

Other Fields Hug Mountains

Up to this time the only producing fields in the Denver basin, with one exception, have been found on domal structures close to the front mountain range. These include the Wellington, Fort Collins, and Berthoud fields. The exception is the Greasewood pool in Weld County, which was discovered out in the basin in 1930. Following this last-named discovery there was an extensive leasing and drilling campaign in that area with the Dakota sands as the main objective. While several of these wildcats had good showings of oil and one made as high as 6,000,000 cu. ft. of gas a day, no producing fields were developed. A few years later eastern Colorado came in for an extensive wildcat play farther out toward the Kansas line with the Pennsylvanian

(Continued on Page 103)

DEATHS

ROBERT LEE BLAFFER, 66, pioneer Texas oil man and capitalist, died of a heart attack in Toronto, Canada, last week. The attack struck him as he was walking on a downtown street. He had been visiting with his family at their summer home at Grafton, Canada. Mr. Blaffer was one of the organizers of Humble Oil & Refining Co., from the board of which he retired August 4, 1941, after a career of nearly 40 years in the oil business. In addition to being chairman of the board of the South Texas Commercial National Bank in Houston, Mr. Blaffer was a director of Reed Roller Bit Co. He was also a member of the board of trustees of Rice Institute. He had been particularly interested in the various war relief programs. Mr. Blaffer was born in New Orleans, La., in 1877. He went to Beaumont, Tex., in 1902 and became associated with W. S. Farish in the oil business in the early days of Spindletop. After the organization of the Humble company, he became one of the directors and vice presidents, and in 1919 became treasurer, which office he held until his retirement. He was elected president in 1933, and chairman of the board in 1937. His widow, three daughters and a son survive.

J. C. STINE, 64, Tulsa oil producer and drilling contractor, died last week during an operation he was undergoing in Detroit, Mich. He had been ill for several months. Mr. Stine, with his brother, Jack, operated Stine Drilling Co., and had worked in most of the oil areas of Oklahoma and Illinois. Mr. Stine was a thirty-second degree Mason and held a life membership in the Elks' Lodge at Olney, Ill.

OSCAR P. BOYNTON, 71, native of Rusk County, Texas, retired business and oil man of Henderson, Tex., died at his home last Friday. He was reputed to have been the first man to drill an oil well in his section of East Texas. His widow survives.

GEORGE HAMILTON PICKARD, 78, formerly a driller in the Canadian oil fields, died recently at Brigden, Ontario.

JAMES KIRK STRACHAN, 93, died at Benmiller, Ont., recently. A native of Scotland, he drilled for salt in the pioneer days of the Canadian industry, and later for oil in Petrolia.

Several District 2 Offices May Move to Tulsa

It is reported that several offices in District 2 in the organization of the Office of Petroleum Coordinator will be moved from Chicago to Tulsa in the near future. This move is supposed to include the director of natural gas and gasoline, Seth W. Herndon, and the assistant chief, Mark S. Patton, as well as an office for the Materials Division. The move will also include administrative officials in the Production Division and Transportation Division for Oklahoma and Kansas, two of the 13 states which comprise District 2 under the OPC setup.

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I.P.A.A. in Final Sessions Plans Action on Reserves

At the I.P.A.A. banquet table Wednesday evening, October 21, seated: Wirt Franklin, senior director, District 2, OPC, Chicago, and first president of the association; former Sen. Henry J. Allen, Wichita; Frank R. Buttram, president, Oklahoma City; Mrs. Buttram; Congressman John M. Houston, Wichita. Standing: J. C. Hunter, president, Mid-Continent Oil and Gas Association, Abilene, Tex.; Harold B. Fell, executive vice president, Ardmore, Okla.; C. E. Buchner, executive manager; Edwin N. Carlson, vice president for Kansas; E. C. Moriarty, member of the executive committee; and Russell B. Brown, general counsel, Washington, D. C.

The proceedings of the first 2 days of the annual meeting of the Independent Petroleum Association of America including the banquet address of Petroleum Coordinator Ickes were reported in the October 22 issue of The Oil and Gas Journal.

WICHITA, Kans. — The membership of the Independent Petroleum Association of America in the final sessions of its annual meeting October 19-21, initiated plans in connection with its main convention theme of assuring this country and its allies adequate oil supplies throughout the war emergency and later. Following meetings sponsored by the association's committee on crude-oil supplies, immediate action was decided upon in two matters pertaining to the solution of the situation outlined by several speakers at the convention in which crude-oil production under war conditions has greatly exceeded the discovery of new reserves.

Letters were sent out October 21 to the heads of oil associations interested in assuring an adequate supply of crude oil for the successful prosecution of the war asking them to appoint one representative with an alternate "for the purpose of meeting as a group to develop ways and means of accomplishing that purpose by whatever means that may be deemed necessary." It is expected that a meeting of this group will be held in the near future.

The association will also sponsor a study of the reports which have been compiled by the U. S. Tariff Commission covering the cost of producing crude oil. A study of 1941 costs was completed several months ago following a request early in the year from a government war agency. It is understood that a later study has been completed pertaining to costs for the first half of this year.

It is felt that these investigations have not included all the factors that should be considered in determining production costs under war conditions including the price incentives required to assure widespread exploration programs needed to correct the reserve deficiency trends reported by special committees. It is planned to have a group of accountants from the oil industry, representing all parts of the country, study the U. S. Tariff Commission findings and report to the association and the group representing all the associations. It is believed that this report can be completed within a few weeks.

The committee on crude-oil supply and 60 representatives of oil-trade associations at its meeting here October 21 found "facts heretofore presented to various governmental authorities and recently to the war minerals subcommittee should be given all possible emphasis to the authorities having jurisdiction over petroleum, and such expression repeated and renewed immediately should call attention to the dangerous trend now existing in respect to the supply of crude petroleum and give all possible emphasis to the necessity of immediately stimulating the discovery effort throughout the recognized potential oil-

Summary of I.P.A.A. Resolutions

Maintenance of adequate oil reserves most important contribution membership can make to war program.

End confusion and delays due to lack of coordination of federal agencies in oil matters with revitalization of OPC powers. Approve efforts of Coordinator Ickes.

Liberalize lease form in public land development with reduction of royalty on future wells to one-eighth.

Condemns proposed drastic legislation covering pollution of waterways as unnecessary.

Commends Congress for continuance of depletion allowance and option to charge off intangible drilling costs.

Oppose additional excise taxes on products of domestic petroleum industry.

Commend Congress for passage of Connolly "hot oil" law.

Appreciates opportunity given by Senate public lands and surveys subcommittee to present data necessity of better prices and need for stimulating exploration.

Allow petroleum workers sufficient gasoline and tires to carry on essential production activities.

Extend 24-in. line now being built from East Texas to Illinois, to eastern seaboard.

Amend wage-and-hour act to provide 48-hour week. Clarify rulings so that "travel time" under "group riding" program will not be considered overtime. Establish definite standards for deferments under draft law.

Enact legislation to protect operators in their inability to carry out lease requirements due to government war laws and regulations.

Enact state laws where needed to promote secondary-recovery operations.

Request government agencies to assure oil operators a fair allocation of critical materials to meet all essential needs. Equitable distribution of all materials within the petroleum industry.

Enjoin members and employes to be on alert for saboteurs in oil country. Organize cooperative groups for fire fighting, first aid and operation of communication systems.

Request governmental agencies in adoption of war policies, to give proper attention to the protection and preservation of smaller independent operator.

Protest selective nomination of oil from specific polls under OPC recommendation and ask that nominations be made to state regulatory bodies to be prorated among several pools where required crude oil can be obtained.

Governmental pricing agency should grant "immediate and substantial increase" in crude-oil price with assurance of "such further and necessary increases from time to time until the present trend toward diminishing of our petroleum reserves has ceased."

Standing: A. C. Simmons, president; G. G. Bauer, editor, and P. J. Moon, executive secretary, Bradford district Pennsylvania Grade Crude Oil Association; George Daggett, Bradford, Pa. Seated: Carl Weiner, Chanute, Kans.; David A. Bartlett, Keener Oil & Gas Co.; D. T. Andrus, Bradford, and W. M. Shoemaker, Forest Oil Corp., Bradford

producing areas. Attention should also be called to necessity of preserving the hundreds of thousands of smaller producing wells and the enormous opportunities of increased supplies by secondary methods."

Technical War

"This war is a technical war and has resulted in the greatest mass education the world has ever known," William B. Stout, president of the Stout Engineering Laboratories, Detroit, Mich., declared at the final general session. In his talk he outlined some of the changes that have taken place under the war impetus affecting not only the conduct of the war but also civilian activities, stating "we are on the eve of a brand-new age of intelligence and responsibility."

Mr. Stout predicted that major changes will be brought in the world's economy as a result of the phenomenal developments in aviation. He predicted that "freight will be carried cheaper by air than it is now carried by steamer.

Mr. Buttram, who completed his third 1-year term at this meeting, Mr. Brown, and all the other officers were reelected. They are: Harold B. Fell, executive vice president; N. T. Gilbert, Midstates Oil Corp., treasurer, and C. E. Buchner, executive manager. The following are members of the association's staff and took an active part at the convention activities: Lawrence E. Smith, director petroleum research bureau; Charles Van Vleck, field manager; S. A. George and Joseph V. MacHugh, counsels at Washington; William H. Little, advertising manager, and Minor S. Jameson, Jr., statistician.

Vice Presidents Elected

The following were elected vice presidents and members of the executive committee:

Arkansas: John D. Trimble, Bailey & Trimble, El Dorado. California: C. A. Johnson, Holly Oil Co., Los Angeles, and A. J. Crites, Anchor Oil Co., Maricopa. Colorado: Warwick M. Downing, Denver. Illinois: J. H. Steinmesch, Minerva Oil Co., El Dorado, Indiana: Harry H. Nowlan, North Central Oil Corp., Evansville. Kansas: Edwin N. Carlson, Yarnell-Carlson Oil Co., Wichita.

Kentucky: N. W. Shiarella, Miller & Shiarella, Owensboro. Louisiana: Charles G. Laskey, Southwest Gas Co., Shreveport. Michigan: A. H. Ledbeter, McClanahan Oil Co., Mount Pleasant, Mississippi: J. F. Barbour, Jr., Henry & Barbour, Yazoo City. Missouri: Merle Becker, W. C. McBride, Inc., St. Louis. Montana: A. E. Crumley, Crumley & Aronson, Shelby.

New Mexico: C. J. Dexter, Berry & Dexter Drilling Co., Artesia. New York: Eastern, John M. Lovejoy, Seaboard Oil Co. of Delaware; western, George W. Holbrook, Bradley Producing Co., Wellsville. Ohio: W. K. Harrington, Henderson Oil Co., Marietta. Oklahoma: Eastern, J. Garfield Buell, Buell, Inc., Tulsa; western, R. Olsen, R. Olsen Oil Co., Oklahoma City. Pennsylvania: Don T. Andrus, Andrus & McDowell, Bradford.

Texas: Northeastern, L. A. Grelling, Boren & Grelling, Tyler; southeastern, H. R. Cullen, Quintana Petroleum Corp., Houston; northwestern, W. L. Stewart, Westbrook Oil Corp., Fort Worth; southwestern, Fred W. Shield, Shield Oil Co., San Antonio. Wyoming: E. J. Sullivan, E. T. Williams Oil Co., Casper.

Curtis F. Bryan, president, Bryan Petroleum Co., Tulsa; Al Buchanan, president, Al Buchanan Drilling Co., San Antonio, Tex., and Paul W. Pitzer, of Pitzer & West, Breckenridge, Tex., are new members of the association's executive committee.

Exhibit Awards

Halliburton Oil Well Cementing Co., Duncan, Okla., was given first place in the exhibits at the convention. The Sperry-Sun Well Surveying Co., Philadelphia, was second, and the Illinois Geological Survey, third. The exhibit of the Geologic Standards Co., Tulsa, received honorable mention.

Cardwell Manufacturing Co., Inc., was host to several hundred members of the association and guests at a stag party Tuesday night, October 20, at the company's Wichita plant.

Model Secondary-Recovery Statute Discussed at Meeting

PLANS for a model statute which will enable oil companies in Kansas and Oklahoma to carry on cooperative secondary-recovery operations were discussed at a meeting of operators acting as a subcommittee held in Wichita, Kans., during the annual meeting of the Independent Petroleum Association of America, October 19-21. The purpose of the meeting was to discuss the merits of various proposals and at the conclusion of the meeting a legal and engineering committee was appointed which will prepare and submit proposed bills for final action by the subcommittee. It is planned to introduce bills in the coming sessions of the Oklahoma and Kansas legislatures.

At the Wichita meeting there was agreement that 80 per cent of the operators in a pool should be sufficient to bring about a cooperative program. Several engineering and legal problems in connection with secondary-recovery operations were discussed.

Representatives of oil-trade associations and operators constituting a subcommittee in attendance at a meeting held in Wichita, Kans., to further secondary-recovery legislation in Oklahoma and Kansas. Seated are: Guy T. Berry, Independence, Kans.; D. R. Snow, Barnsdall Oil Co., Tulsa, vice chairman; W. P. Z. German, general counsel, Skelly Oil Co., Tulsa, chairman; John Denman, Jr., Independence, Kans.; David A. Bartlett, Keener Oil & Gas Co., Tulsa; T. A. Morgan, conservation officer, Kansas Corporation Commission, Wichita. Standing: J. B. Milam, Claremore, Okla.; Glenn W. Patchett, Mid-Continent Oil and Gas Association, Tulsa; C. V. Millikan, Amerada Petroleum Corp., Tulsa; N. E. Maxwell, Cities Service Oil Co., Bartlesville, Okla.; R. C. Earlougher, Geologic Standards Co., Tulsa; Burdette Blue, president, Oklahoma-Kansas division, Mid-Continent Oil and Gas Association, Tulsa; T. Murray Robinson, Oklahoma City, Okla.; Ray M. Johnson, Ardmore, Okla.; D. T. Andrus, Bradford, Pa.; Colin C. Rae, Skelly Oil Co., Tulsa; Clarel B. Mapes, secretary, Mid-Continent Oil and Gas Association, Tulsa; H. W. McNeil, Harper & Turner Oil Co., Oklahoma City, Okla.; Donald P. Oak, Tulsa; John M. Denman, Sedan, Kans.; and W. G. Phillips, Tulsa

Applications of

THE GIRBOTOL PROCESS

for separation or recovery of

H_2S

Purification of sour natural gas for industrial and domestic use. • Purification of refinery and natural gas for recovery of sweet liquid fractions and fuel gas. • Protection of catalysts against poisoning by hydrogen sulfide. • Elimination of corrosion in process equipment and pipe lines. • H_2S recovery from refinery and natural gases for sulfuric acid and sulfur production. • Purification of natural gas to prevent diffusion of sour gas into sweet gas sands. • Purification of refinery gases and liquids for feed stock to polymerization and alkylation plants.

Applications of

THE GIRBOTOL PROCESS

for separation or recovery of

CO_2

Removal of CO_2 from raw hydrogen used in hydrogenation of oils and ammonia synthesis. • Recovery of CO_2 from stack gas in the production of liquid carbon dioxide and dry ice. • Production of inert atmospheres for synthetic rubber production, heat treatment of steel, and other uses.

A Typical Girbotol Unit

GIRBOTOL *Purification Process*

THE GIRDLER CORPORATION - *Gas Processes Division* - LOUISVILLE, KY

Natural Gas News

Potentialities of Natural Gas as Source of War Products Outlined for Chemists

NEW YORK.—Fighting aviation gasoline and synthetic rubber can and will be produced in great quantities from natural gas.

Dr. Gustav Egloff, director of research of Universal Oil Products Co., thus described the newer wartime uses of natural gas before the American Institute of Chemists meeting at the Chemists Club in New York on October 23. Dr. Egloff is the newly elected president of the institute, and his address was presented at a dinner given in his honor.

The functions of catalysts in producing wartime products from natural gas are many and varied, Dr. Egloff said. By catalytic action the nature of certain molecules is changed, and other molecules formerly believed to be hostile or indifferent to each other are combined in stable compounds to make strange new products.

The demand for 100-octane gasoline has increased until today it is almost unlimited, so the adaptation of natural gas as another source of this vital fuel is of the greatest importance.

Dr. Egloff is among those who believe that synthetic rubber, when perfected and produced in large quantities, will be superior to natural rubber for making tires and for other purposes. He visions automobile tires with a life of 100,000 miles, produced from butadiene, ethylene and styrene derived from natural gas and other hydrocarbons.

Natural gas is also an important source of high explosives, being cracked into hydrogen which is combined with nitrogen from the air, producing synthetic ammonia. The ammonia is readily oxidized with air into nitric acid. The combination of ammonia and nitric acid produces ammonium nitrate, a powerful explosive.

Toluene is another war product that can be produced in quantity from natural gas. Toluene is a vital ingredient of TNT. In World War I the maximum toluene production was at the rate of 15,000,000 gal. a year, and coke ovens were almost the sole source.

Today we are preparing to produce between 250,000,000 and 300,000,000 gal., most of it from petroleum and natural gas. Still other explosives are to be produced from constituents of natural gas.

Plastics are another class of products that can be made from natural gas and great increase in production can be looked for from this source.

Acetylene is used in the production of neoprene —and it is also a base material for nylon. Hitherto it has been produced almost altogether from calcium carbide, derived from coal and lime in electric furnaces, requiring much electric power.

It can also be produced readily and cheaply from natural gas at a great saving of power, which today is essential to war production.

●

FPC Certificate Issued Natural Gas Pipeline, Texoma

WASHINGTON, D. C.—The Federal Power Commission last week issued a certificate of public convenience and necessity under an amendment to Section 7(c) of the Natural Gas Act to the Natural Gas Pipeline Co. of America and its affiliate, Texoma Natural Gas Co., both having principal offices in Chicago.

According to the joint application for the certificate filed February 23, 1942, Texoma owns natural-gas reserves in the Panhandle field of Texas, aggregating 144,500 acres, with a potential producing capacity of 2,808,089,000 cu. ft. daily, and a 24-in. main pipe line extending from a point near Fritch, Tex., to the main pipe line of the Natural Gas Pipeline Co. near Gray, Okla. In addition, the Texoma company owns a 26-in. pipe line 34 miles long, extending from a location near Dumas, Tex., to a point where it connects with its 24-in. main line.

Natural Gas Pipeline Co., the application says, transports the gas from its compressor station near Gray, Okla., through a 24-in. main pipe line to a point near Joliet, Ill., from where a 20-in. main pipe line extends to a point near the Illinois-Wisconsin line, south of Burlington, Wis. The main 24-in. line is "looped" by approximately 390 miles of 26-in. capacity in Kansas, Nebraska, and Iowa.

During 1941, the application stated, Natural Gas Pipeline Co. transported and sold a total of 77,005,047,000 cu. ft. of natural gas, of which three-fourths was produced by Texoma. The aggregate volume of natural gas transported and sold at wholesale by the two applicant companies was given as approximately 245,000,000 cu. ft. per day.

FPC Certificates Issued To Three Natural Gas Concerns

WASHINGTON, D. C.—Certificates of public convenience and necessity were issued last week to Apex Gas Co., Inc., of Shreveport, La., Southern Natural Gas Co. of Birmingham, Ala., Commercial Gas Pipeline Co., of Fort Scott, Kans., and Independent Natural Gas Co., of Bartlesville, Okla.

The Apex Gas Co., Inc., operates a natural-gas pipe-line system extending from a point in the Logansport field near Joaquin, Tex., to a point in De Soto Parish, Louisiana, and supplies, at wholesale, natural gas for resale in Conti, Coushatta, and Natchitoches, La. The Southern Natural Gas Co. operates a natural-gas pipe-line system which extends from the Logansport field to supply natural gas at wholesale for ultimate distribution in Anniston, Auburn, Bessemer, Gadsden, Montgomery, Opelika, Phenix, Selma, Talladega, Tuscaloosa, Tuskegee, and other Alabama communities; in Atlanta, Cedartown, Columbus, Griffin, Macon, Milledgeville, Newman, Rome and other communities in Georgia; and in a number of Mississippi communities including Aberdeen, Amory, Columbus, Meridian, Starkville, Tupelo, Vicksburg, West Point and Yazoo City. The Commercial Gas Pipeline Co. sells natural gas for resale for ultimate public consumption in Blue Mound, Bronson, Fort Scott, Kincaid, Mildred, Moran, Pleasanton, and Redfield, Kans., and in Adrian and Butler, Mo. The Independent Natural Gas Co. is engaged in the transportation and sale of natural gas for ultimate public consumption by means of its pipe-line system extending from Gray County, Texas, to its connection with the Northern Natural Gas Co.'s pipe line in Carson County, Texas.

●

PRP Forms Approved for First-Quarter Supplies

WASHINGTON, D. C.—Production Requirements Plan application forms for the first quarter of 1943 have been approved by War Production Board and will be mailed out as soon as they are received in quantity from the printer. The schedule for the January-March, 1943, quarter calls for receiving applications and returning the certificate to applicants some time in advance of the beginning of the quarter.

Total raw material authorizations for military and nonmilitary production in the fourth quarter of 1942 have been kept within the limits of the estimated supply by the determinations of the requirements committee. This is the first time that such a balance has been accomplished in advance.

In adjusting requirements to match available supply it was necessary to cut back requests of companies under PRP from a moderate amount in the case of direct military items to a substantial amount in the case of less essential commodities.

All materials authorizations for the fourth quarter will be covered by preference ratings in the AA series, and a new AA-5 rating has been established to be applied in certain instances.

All military items and many essential nonmilitary items already were covered by ratings of AA-1 through AA-4. Some of the nonmilitary items included among the quantity determinations of the requirements committee were not previously rated in the AA category. To uprate such items into AA-4 would put them in competition with military items already in that category. Rather than do this, the new classification of AA-5 was established. It will include any balance of the amounts on approved schedules to which the present PRP pattern ascribed a rating lower than AA-4.

Carbon steel illustrates the problems encountered. When all requests were added, it was found that the needs of companies using this type of metal were estimated at 15.4 million product tons for the fourth quarter. This total included the tonnage required by companies under PRP and the tonnage set aside for use by those not under this system. The former group, of course, comprises the majority of companies using this material.

The total requests from all claimants except export requirements amounted to 15.4 million tons. The estimated supply, after allowing an amount for export and a reserve for contingencies, is 11.1 million tons. It was therefore necessary to cut the requests by 4.3 millions tons.

Requirements for all of the items for which carbon steel is used, from cutlery to bombs, were examined. Reductions first were made among those items which were not for direct military use. For instance, the armed services have ordered large quantities of sewing machines, cutlery, etc., which are military items in the sense they are purchased for use by the services, but they are not for direct military use in the sense that a bomb or airplane is.

ENGINEERING *and Operating* SECTION

Effects of Well-Cleanout Work In Venango District

The authors (see Page 104 for biographical sketches) are well acquainted with the problems in the Pennsylvania Grade region, and here discuss methods being employed to put producing properties on a profitable basis.

By ROBERT B. BOSSLER*† and PARKE A. DICKEY‡

THE oil producers of the Pennsylvania Grade region are experiencing great difficulties in maintaining a small margin between the fixed market price of crude oil and operating costs which are continually increasing. The best method of staying in business seems to be to increase the average daily production per well, and thus decrease operating costs per barrel. However, the small margin of profit makes capital difficult to attract and new materials for development work are very hard to obtain.

The rehabilitation of leases and the cleaning out of old wells can result in substantial increases in production and material decreases in operating costs. It is not believed that rehabilitation and cleanout work alone can increase production to the extent required by the national demand for Pennsylvania oil and the economic well being of the industry. However, many operators who are financially unable to install secondary-recovery equipment in the proper manner can greatly improve their position by undertaking a program of lease rehabilitation and well-cleanout work. Those operators who are maintaining a systematic development plan can keep their undeveloped leases in the black by cleaning out wells and maintaining maximum oil production from them.

It costs nearly as much to operate a well producing a small amount of oil as it does to operate a well producing a large amount. This simple fact accounts largely for the vastly different costs of producing in different parts of the country and even in different parts of the same pool. Costs of production differ widely in the Kane-Butler district of Pennsylvania, even between adjacent leases, depending on how intensely they are being repressured and their general condition and efficiency, as well as on the richness of the sand.

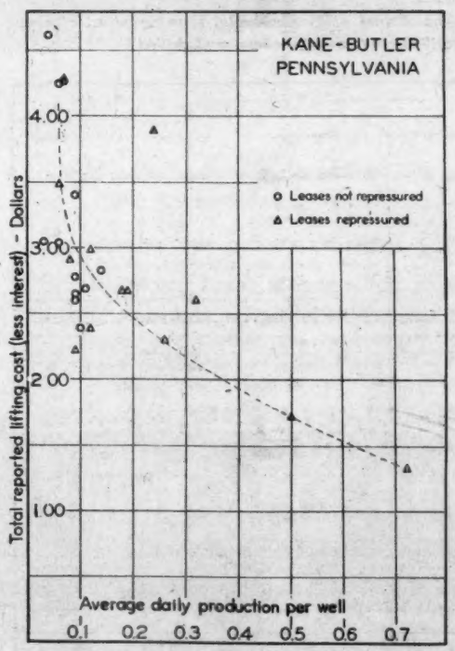


Fig. 1—Cost of production per barrel versus average daily production per well in Kane-Butler district of Pennsylvania. From brief submitted by Pennsylvania Grade Crude Oil Association to Office of Price Administration, September 26, 1941

Effect of Increased Production per Well on Cost of Production

In September 1941 various producers submitted costs of production to a committee of the Pennsylvania Grade Crude Oil Association. These data are published in a brief submitted to the Office of Price Administration on September 26. Costs of production in the Kane-Butler area ranged from $1.34 to $4.62 per barrel (not including interest on invested capital). The lowest cost leases are those undergoing intensive repressuring, while the highest cost leases are those in relatively poor districts where no repressuring is attempted. It should be emphasized that costs for the repressured leases are lower than the nonrepressured leases even when depletion, depreciation, amortization and overhead charges are increased by the secondary-recovery development. The weighted average* cost per barrel for the nonrepressure properties was $2.91 and for the repressured properties it was $2.36.

If the reported cost of production per barrel is plotted against the daily average production per well, the relation is brought out in a striking manner (Fig. 1). All the oil from wells producing less than 0.09 bbl. per day costs more than $3 per barrel to produce, and nearly all the oil from wells producing more than 0.1 bbl. per day costs less than $3. Only the two properties producing

*Published by permission of Brundred Oil Corp. and the state geologist of Pennsylvania.

†Brundred Oil Corp., Oil City, Pa. ‡Pennsylvania Topographic and Geologic Survey, Pleasantville, Pa.

*Iten *J* was not included in the averages since it includes some repressured as well as nonrepressured properties.

½ bbl. or more per well per day reported costs of less than $1.75 per barrel.

Cleanout Work as a Method of Increasing or Maintaining Production

The production of nearly any oil pool decreases with time, and gradually becomes so low that it no longer pays to operate the property. This decrease in production is partly due to the natural depletion of the oil and gas in the sand, but it may also be due to neglect of the wells. The flow of oil may be hindered by the following conditions:

1. Pocket and shot cavity are filled with cavings.

2. Junk in the hole, which prevents placing the working barrel at the proper depth.

3. Shot cracks and flow passages in the sand are filled with paraffin, sludge, gypsum, lime, or silt.

4. Frictional resistance near the sand face, which may be decreased by enlarging the effective "shot-crack radius."

All of these conditions may be improved by cleaning out the wells.

In the Venango district cleaning out is usually done with light spudding machines, and small tools. Other methods, such as blowing material out of the hole with compressed air, have been tried with only partial satisfaction.

In the ordinary procedure of cleaning out a well, the rods and tubing are removed, and the cavings and junk are fished out or drilled up with the tools. It is not considered good practice to drill out all the material at once, and "put the well on bottom." It is considered better to "keep the tools on top" of the cavings, running a fairly slow motion and short stroke to promote a scouring action on the face of the sand by the bit and rock fragments in the hole. It is also thought that this method will induce the sand to cave, and the cavings will be drilled up as they come in and not be so likely to fall on the tools when they are below the sand. After the material has been removed and the well is clean to bottom, further caving is induced by dumping in several barrels of water and churning it around with the tools.

At this point some operators shoot the well, while others do not. If the well is shot, the charge is usually light; 1 or 2 quarts to the foot. Some operators shoot the wells themselves, using dynamite lowered or often dropped in from the surface. Less water is used for tamping than in a new well, in order to avoid plugging the pores of the sand by water under a large head. After the shot, the cleaning-out operation is repeated, and the tools are run in very much the same manner as before.

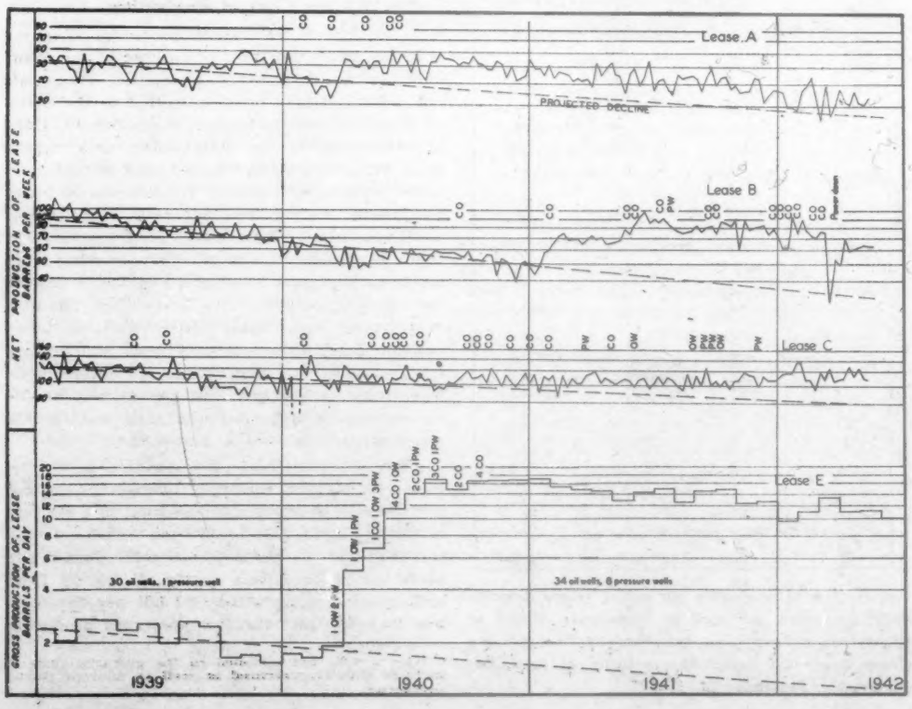
Electric logs have been effectively used to check the original driller's log and determine the position of the shot, although this method has not yet come into general use. The results indicate, however, that this practice cannot be too strongly recommended. Old records are often unreliable, both as to depth and amount of pay sand in the well. Frequently only the most permeable part of the sand showed oil and was shot in the original drilling. That part is now the most depleted, although large amounts of oil may remain in the tighter parts of the sand that were never shot originally. In numerous districts certain sands that were never even recorded when the field was first developed have proved very prolific. The use of electric logs will make possible the cleaning out of thousands of wells whose original records have been lost, or were so incomplete and unreliable that cleaning out and reshooting would otherwise be impossible. Their routine use before shooting should result in greatly increased ultimate recovery of oil.

Fig. 2—Typical cleanout machine in operation

In certain localities it is the practice to "steam" the wells by piping steam into the well from a portable boiler. After the well is cleaned out to bottom, tubing without barrel or valves is run in, and steam is injected for several hours. Some operators then pull the tubing immediately and bail out the condensed water. Others consider it beneficial to leave the water on the sand overnight. The steaming operation is often repeated. Other methods of producing heat for the purpose of removing paraffin and thick or emulsified oil have been attempted. These include the use of heat-generating chemicals or electrical heating elements.

No one method is universally used in the region. Different operators, cleanout men, and superintendents have their own ideas as to the method and procedure. Experience is a great asset, and a good cleanout man or superintendent can produce results economically where others may fail to do so. In certain districts shooting enormously lengthens the time necessary to clean out and produces little result. In other districts shooting is a prime necessity. Steaming has been more successful in some districts than in others and occasionally steaming alone is sufficient.

Fig. 3—Production curves of four properties in the Venango district of Pennsylvania, showing effect of cleanout work. CO, old well cleaned out; OW, new oil well drilled; PW, new pressure well drilled



Examples of the Effect of Cleanout Work in Reducing Operating Costs

Data on the effect of a cleanout and rehabilitation program on the operating cost of five leases in the Titusville-Oil City district are presented herewith. The costs have been taken from the books of the companies whose accounting methods vary somewhat. No attempt has been made to reconcile them, nor should these costs be taken as representative of the district. Production given is the company interest, less royalty. Depletion, depreciation, amortization, and overhead are included in the costs per barrel, but corporation income taxes and interest on investment are not

Fast Delivery and Erection of

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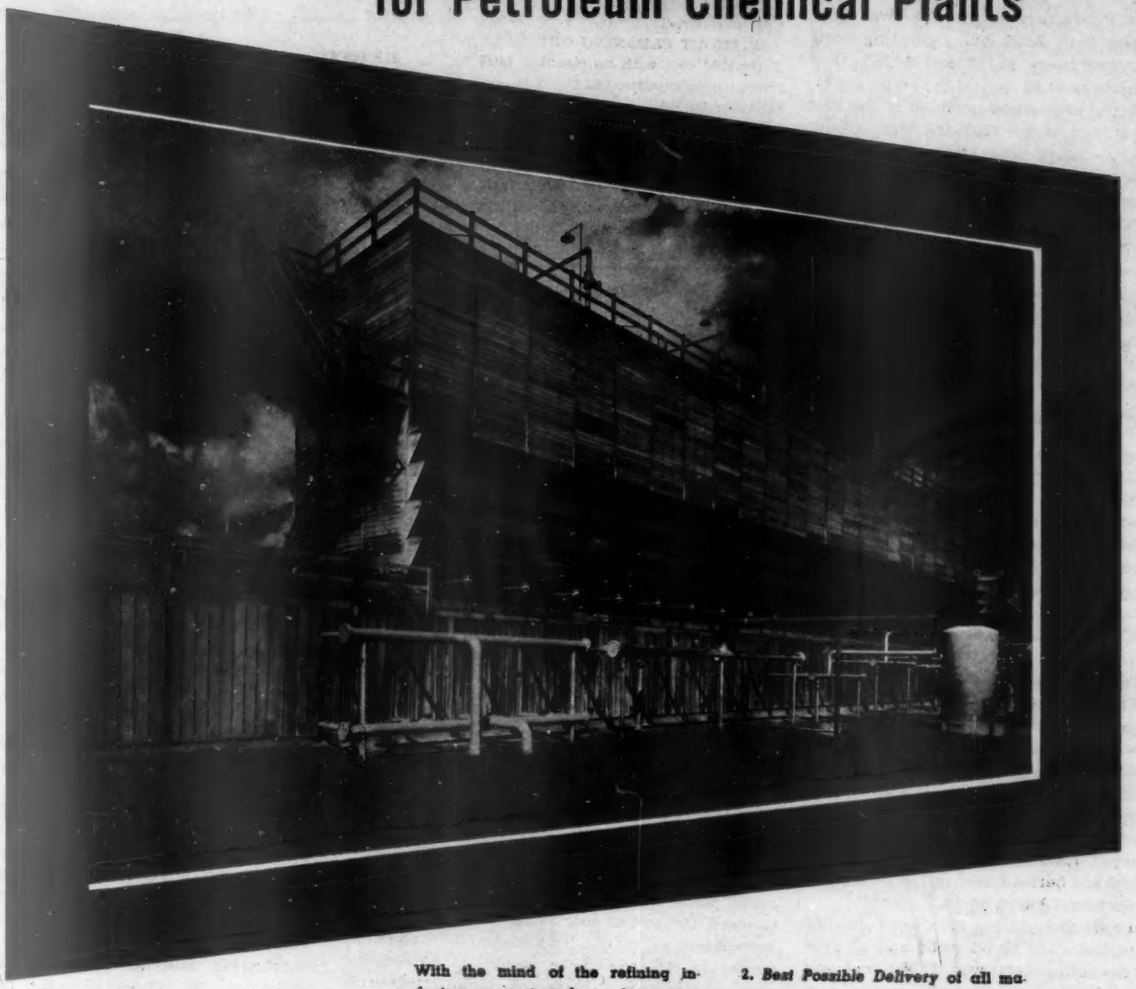

Above—Hudson Induced Draft Cooling Tower, designed for use with cooling sections in base, at the La Gloria gas processing plant.

With the mind of the refining industry concentrated on increasing the output of aviation gasoline, synthetic rubber bases, alcohol, toluene and other products essential to war—Hudson is ready with:

1. *Experienced Personnel* to promptly offer Cooling Tower recommendations to best meet the particular cooling problem.
2. *Best Possible Delivery* of all materials — usually within 60 days — for large towers.
3. *Fast Field Erection* by thoroughly experienced crews. Towers are pre-fabricated in our Houston mill, thus minimizing field erection time and making optimum use of skilled labor.

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included. Gross production of four of these properties is shown in Fig. 3.

Lease A.—Production during 1939 was 2,531 bbl. In that year there were in operation 23 oil wells and 7 input wells. The operating costs were calculated by the company for a group of leases of which *A* is one. The share of the operating cost chargeable to this lease on the basis of wells in operation was $3,725. The operating cost per barrel was therefore $1.47.

In 1940, five wells were cleaned out at an average cost of $326 per well; a total cleaning out cost of $1,630. Production during 1940 was 2,542 bbl. and during 1941, 2,233 bbl. Operating costs during these years were $4,125 and $4,265. Cost per barrel was thus $1.62 and $1.91, respectively.

During 1939 the production declined at the rate of 18 per cent per year. Had the cleaning-out work not been done, production during 1940 would have been only 2,080 bbl. and during 1941, 1,700 bbl. Operating costs would have been $1.99 and $2.51 per barrel. The additional oil recovered in 1941 and 1940 as a result of the work amounted to about 2,000 bbl., which was sold for $4,740. Since the cleaning out cost $1,630, a profit of $3,110 has been realized, and in addition production at the beginning of 1942 was about 1 bbl. per day more than it would have been had the work not been done.

New Pressure Well

Lease B.—Production during 1939 was 4,233 bbl. and during 1940 was 2,838 bbl. There were 39 oil wells and 1 pressure well on the property. Operating costs were $6,990 in 1939 and $8,200 in 1940. The operating cost per barrel was therefore $1.65 and $2.89, respectively.

In 1940, one well, and in 1941, eight wells were cleaned out at a cost of $1,936. One new pressure well was drilled at a cost of $1,128 which includes coring, packers, and tubing assembly. The total cost of the rehabilitation work was therefore $3,064. Production during 1941 was 3,902 bbl., and during the last 3 months of that year it was at the rate of 4,150 bbl. per year. Operating cost in 1941 was $9,640, so that the cost per barrel for the last 3 months was $2.32. If no cleaning out had been done, a projection of the decline curve indicates that production during 1941 would have been about 1,530 bbl., and the cost would have been $6.30 per barrel based on 1941 cost, and about $4.50 per barrel based on 1939 cost.

Lease C.—Production during 1939 was 5,808 bbl. There were in operation 52 oil wells and 12 pressure wells. Operating cost was $7,950 and cost per barrel was $1.37.

In 1940, 11 wells were cleaned out at a cost of $3,586. Production during 1940 was 5,505 bbl. and operating cost was $8,800 or $1.60 per barrel. In 1941 production was 5,451 bbl., operating cost $9,100 and cost per barrel $1.67.

Some cleanout work was done in 1939, so that the general decline for the lease is not shown by the total production curve. However, production from parts of the lease on which no work was done declined at the rate of about 15 per cent per year. If this rate is applicable to the whole lease, production in 1940 would have been 5,110 and in 1941, 4,490 bbl. The operating costs would have been $1.73 and $2.02, respectively. The net gain in production was 1,356 bbl., which at an average price of $2.37 was worth $3.220. The cleanout work was therefore almost paid for at the end of 1941, and production was running 2½ bbl. per day more than it would have been without the work. It is worth noting that although this lease showed a profit during these years, the group of leases of which it is a part was operated at a loss during 1940 and 1941.

Lease D.—The production curve for this lease is not shown in Fig. 3, but complete data are given in the accompanying table. Production in 1937 was 6,846 bbl. from 157 oil wells and 12 pressure wells. Rehabilitation work was started in 1938. Fifteen wells were cleaned out in that year, 25 in 1939, 23 in 1940, and 6 in 1941. Three pressure wells were drilled in 1940. Production increased to 11,440 bbl. in 1941. Projection of the decline in production from 1934 to 1937 indicates that had no work been done, the lease would have produced only 5,940 bbl. in 1941. The actual cost per barrel in that year was $1.78, but this would have been $3.22 if the work had not been done. The work cost about $19,000, and the value of the additional oil already run is $43,000. The lease is still producing nearly twice as much as it did in 1937.

TABLE 1—COST AND PRODUCTION DATA FOR LEASE D

ACTUAL EXPERIENCE WITH CLEANING OUT	1937	1938	1939	1940	1941
Oil wells in operations	157	157	157	157	157
Air wells in operation	12	12	12	16	16
Book operating expense*	$11,784.47	$12,646.86	$11,668.91	$13,857.42	$12,414.24
Depreciation, depletion and amortisation	$6,659.45	$7,129.46	$7,294.89	$7,393.43	$7,464.31
Number of wells cleaned out	0	15	25	23	6
Cost of cleaning out	.....	$1,618.35	$2,823.06	$3,180.86	$529.25
Other rehabilitation	.....	$6,390.76	.....	(¶)	.....
Actual total expense†	$18,443.92	$27,785.43	$21,786.86	$24,431.71	$20,407.80
Actual production, bbl.	6,846	10,189	11,306	11,489	11,440
Cost per barrel	.....	$2.73	$1.93	$2.13	$1.78
WITHOUT CLEANING OUT					
Estimated cost with no cleaning out§	$18,443.92	$19,253.18	$18,245.28	$20,481.05	$19,085.68
Predicted production, bbl.‡	6,846	6,570	6,300	6,120	5,940
Cost per barrel	$2.69	$2.93	$2.90	$3.35	$3.22

*Includes overhead and general expense.
†Does not include interest or invested capital.
‡Based on decline 1932-37 inclusive.
§Equals book operating plus depreciation, amortisation and depletion based on predicted production.
¶Three air input wells drilled and equipped cost $4,370.34.

Lease E.—Lease E illustrates a somewhat different use of the cleanout tools from the previous examples. In this case there were nearly enough old wells on the lease to make intensive repressuring possible. Some of these were cleaned out, and in addition several wells that had been plugged and abandoned were reopened and reshot. Seven new pressure wells were drilled, and one old well was converted to a pressure well. The difference lies in the fact that this sort of cleanout work is really a part of the repressuring development work and its expense could logically be charged to investment, along with new drilling, installation of plants, and so on. The work discussed in the previous examples is a necessary, although frequently neglected, maintenance operation, and is usually and properly charged to operating expense on the company's books.

During 1939 there were 30 producing wells and 1 pressure well in operation. The lease produced 570 bbl. (net) in that year, and total operating expense, including depreciation and depletion, but not interest, was $883. The cost per barrel was therefore $1.55.

In 1940, 16 old wells were cleaned out at a cost of $1,800 and four new oil wells and seven new pressure wells were drilled. One old oil well was tubed and made into a pressure well. The cost of this work was $16,515. Lifting expense in 1940 increased to $2,547 and depletion, depreciation, overhead, and property taxes increased to $3,052, so that total operating expense, not including drilling and cleaning out, was $5,599. The lease produced 3,476 bbl. of oil in 1940, at a cost of $1.66 per barrel. In 1941 operating expense was $7,311 and the lease produced 4,614 bbl. at a cost of $1.58 per barrel.

Projection of the decline curve indicates that if no work had been done, the lease would have produced 445 bbl. in 1940 and 345 bbl. in 1941. If the total operating expense had been the same in those years as it was in 1939, or $883, the cost per barrel in 1940 and 1941 would have been $1.98 and $2.56, respectively. During 1940 and 1941 the extra oil produced as a result of the repressuring work was 7,300 bbl., which at an average price of $2.25 sold for $16,420. The lifting cost, overhead, and property taxes were $7,065, leaving $9,355 to pay for the development work. This nearly will have been paid for by the end of 1942, and the lease will be producing about 8 bbl. per day instead of only 1 bbl. per day.

Costs of Producing Oil

This paper is written from an engineering rather than an economic point of view. It should perhaps, be pointed out that routine cleanout work does not lead to very profitable operations. The examples cited indicate that unless the clean out work had been done, the properties would now be operating at a loss. Many properties in the region are producing oil at such a narrow margin that they are unable to provide the capital for an extensive cleanout and rehabilitation program, even though such a program provides their only salvation. As production declines, their position will become steadily worse.

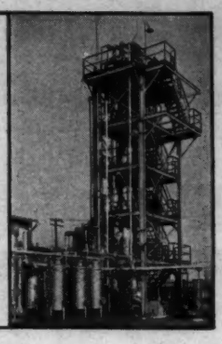
The writers believe that Pennsylvania Grade crude can be produced for a price that will make competition with other crudes possible, taking into account nearness to markets and the higher lubricating content, but that this will be possible only by a readjustment of methods and values. For those who are financially unable to adopt methods of increasing their rate, there seems to be but little hope.

The Office of Price Administration, in order to provide an incentive for immediately increasing production, promised an increase in price of 25 cents when the production should attain a rate of 85,000 bbl. per day from the Pennsylvania Grade region. Not only is it rather peculiar to raise the price when production becomes adequate, but this device appears to have been both ineffective and unsound economically. If price is to be used by a government agency to increase production, it should be set realistically at a point that will make that increase possible. A promise of a raise later contingent on increased production does not provide the funds to bring about the increase. When production has increased, that very fact will have reduced costs and made the higher price less necessary.

The refiners in the region are desperate for more crude, and are competing with each other to obtain it. The only hope for the producers and refiners both is for the former to increase production and thereby lower operating costs.

CHEMICALS *from* PETROLEUM

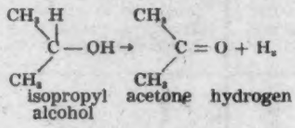
By W. T. ZIEGENHAIN



ACETONE

ACCEPTED as one of the most important oxygen-bearing materials resulting from simple hydrocarbon synthesis, acetone is also a primary intermediate in the production of other industrial chemicals.

Classified chemically as the simplest ketone in a large family, acetone is a colorless liquid having a specific gravity of 0.792 at 68° (20° C.) and boils at 133.3° F. (56.3° C.). Its uses extend from a place on the lady's dressing table as a remover of nail polish to that of principal solvent in the manufacture of smokeless gun powder. Commercially, large quantities of it are used in selectively separating petroleum wax from oil fractions and as a paint and varnish remover. Acetone is well established as an article of general trade and like methyl and ethyl alcohols was made entirely of fermented or distilled vegetation but now can be made commercially from petroleum. One of the reactions of interest to men engaged in petroleum chemistry in the synthesis of isopropyl alcohol from propane and the subsequent controlled dehydrogenation or oxygenation of this to the ketone; for example



isopropyl alcohol → acetone + hydrogen

A chemical reaction of more recent origin and more specific application to refining involves the joining of simple olefins produced by cracking oils with an acid anhydride. In order to bring about the reaction a catalyst is used and most recently zinc chloride or sulfuric acid have been studied.

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ABSTRACTS

of papers presented at the Mid-West Fuels and Lubricants regional meeting of the Society of Automotive Engineers, Tulsa, October 25-29

GASOLINE ENGINE EXHAUST ODORS. J. J. Mikita, Harry Levin, and H. R. Kichline, The Texas Company.

THE pungent exhaust odor that is noticeable as a bus decelerates has been made a cause of study. After operating a laboratory engine under conditions duplicating bus-engine requirements the causes of odor were determined and certain remedies prescribed for minimizing them. The author summarizes these remarks by saying that no simple engine adjustment can eliminate the trouble.

Furthermore, it is plain that so long as incomplete combustion occurs as a result of residual-gas dilution, changes in gasoline will not eliminate aldehydes. In exceptionally bad cases numerous expedients are available which will reduce exhaust odor to such an extent, perhaps, that noticeable improvements will be obtained. In cases of poor manifolding, a simple expedient for producing a marked decrease in odor is to use a very volatile fuel. Such a remedy is obtained, however, at a sacrifice because highly volatile fuels have low specific gravities and therefore result in poorer economy. Another method of producing a decrease in odor is to raise the intake mixture temperature or install higher temperature manifolds. Reports from the field indicate that with buses that have been in operation for long periods, a satisfactory reduction in aldehydes may be obtained by cleaning the deposits from the inside of manifolds, thus eliminating the material which traps fuel during wet-mixture conditions. Adjusting the idling mixture to the leanest possible limit also reduces the aldehydes in the exhaust gas during deceleration. A mechanical device that cuts off the fuel or ignition during deceleration should be helpful.

NEW METHODS FOR THE EVALUATION AND RECORDING OF PISTON SKIRT DEPOSITS. H. R. Luck, T. A. Rogers, and A. G. Cottaneo, Shell Development Co.

BY using a special camera the authors were able to record the effect of skirt deposits of gum and carbon on pistons. The camera is built into what they call a "piston-photographing machine" which produces an image of the entire piston surface upon a single plane with practically no distortion. In use, a test piston is rolled slowly and revolved at constant speed along an arc. It presents each point of its circumference equidistant from the center of the arc for photographic exposure through a ¼-in. slot which moves with the piston and is in line with the point of contact and with the camera lens.

By this method the entire surface may be shown in a print, but it has been found more practical to photograph only one-half of it at a time. The resulting picture clearly reveals all marks, such as those of the original finish, scuffs, scratches, carbon deposits, varnish, etc. It is possible to make the photograph either in monochrome or color, and to use color filters for special effects.

The densitometer is used for purposes of laboratory comparison to evaluate piston-lacquer deposits left by various lubricants. The piston is scanned at a predetermined number of points and the readings converted to reciprocal reflectivity values, the average of which is called the "piston rating." The final rating is the difference between the rating of the clean piston as it goes into an engine and that of the lacquered piston removed for testing.

Probably the main advantage of the apparatus lies in the uniform conditions for piston lighting and exposure.

STANDARD PRACTICE INSTRUCTIONS. J. Willard Lord.

STANDARDIZATION of laboratory and field-test practices for evaluating oils has become a recognized procedure among refiners and automotive-engine manufacturers. However, engineering changes in the motor parts are being made so fast, it is difficult to interpret always, or to forecast service results from laboratory results. As a means for better correlating the results with correct engine-maintenance practices, the author suggests the completion of a "Standard Practice Instructions" manual.

CORRELATION OF LABORATORY OIL BENCH TESTS WITH FULL-SCALE ENGINE TESTS. C. W. Georgi, technical director, Quaker State Oil Refining Corp., and chairman of the S.A.E. Bench Test Committee.

FOR the past year six reference lubricants have been made under laboratory investigation in 20 laboratories utilizing the Underwood apparatus, Lauson single-cylinder engines, and other laboratory means for correlating laboratory test results and engine performance. The work was undertaken as a joint research project by the S.A.E. and the A.P.I. with direct cooperation being given by the following companies:

Atlantic Refining Co.
Carbide & Carbon Chemicals Corp.
Continental Oil Co.
E. I. Du Pont de Nemours & Co.
Franklin Creek Refining Corp.
General Motors Corp.
Gulf Research & Development Co.
Kendall Refining Co.
Lubri-Zol Corp.
Penn State College.
Pure Oil Co.
Quaker State Oil Refining Corp.
Shell Development Co.
Standard Oil Co. of California.
Standard Oil Co. (Indiana).
Standard Oil Co. (Ohio).
Standard Oil Development Co.
Texas Co.
Union Oil Co.
Waukesha Motor Co.

The objectives of the Bench Test subcommittee were outlined as follows:

1. To determine the degree of correlation of the various bench tests with Chevrolet engine tests.

FIRE and how to fight it!

IT'S EASY TO REMEMBER THESE FACTS ABOUT

FIRE EXTINGUISHERS

CLASS OF FIRES	CLASS A FIRES	CLASS B FIRES	CLASS C FIRES
	Are fires in ordinary combustible materials such as paper, wood, fabrics, rubber, shavings, excelsior, etc.	Occur when flammable liquids, greases, etc. become ignited.	Are fires in which electrical equipment is involved.
HOW TO FIGHT THEM	Quench and cool this type of blaze with water or extinguishing agents containing large percentages of water.	Blanket this type of fire. Cut off oxygen supply, thus preventing combustion.	Blanketing or smothering is essential. *It is of first importance to use an extinguishing agent which is non-conductor of electricity.*
USE THESE			
IN THIS WAY	Aim at base of fire. When fire seems extinguished, look carefully for signs of glowing embers and quench them.	If outdoors, keep wind at your back. If flowing fire, work "up-stream." If it's a 2-level fire, start at bottom, work up.	Shut off electrical current, if possible. Don't stand in puddles or wet places while using extinguisher.

DON'T DO THESE THINGS

Don't ever forget that portable fire extinguishers are for small, incipient fires. Don't tackle too big a blaze with hand extinguishers.

Don't fail to turn in fire alarm if there is the slightest question about your ability to handle the fire.

Don't disobey fire-fighting rules.

Don't use a water stream on electrical fires or on Class B blazes; it may make things tragically worse.

Don't use extinguishing equipment that is not "approved by Underwriters Laboratories," or by Factory Mutual Laboratories as indicated by this symbol. FM

GET THIS CHART FREE!

Fire-fighting equipment has a war job now. This means, simply, that most plants have to get along with present supplies of extinguishers for the duration.

Therefore, Walter Kidde & Company presents this chart—to make fire-fighting more effective. If key workers understand facts about extinguishing, your Kidde* extinguishers and other equipment will kill fires faster, cut losses.

If you want reprints of this chart for your personnel, write to

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*Formerly known as "LUX" extinguishers

2. To determine the agreement between the different laboratories testing the same oils in the same apparatus.

3. To determine the effect of Underwood and Lauson engine-test conditions on correlation with Chevrolet engine tests and on agreement between the different laboratories.

In the cooperative work each laboratory was requested to test the six oils following the test procedures each had used in the past. Standardized test conditions were not set up for any of the bench test methods so this work was not a standardization program but merely an exploratory program. The results of this cooperative work should, therefore, be viewed accordingly

Mr. Georgi reported that the Underwood apparatus has been found to be useful in differentiating the stability and corrosion properties of poor, mediocre, and good oils; the Lauson engine test to be versatile and, with proper selection of operating conditions, to rate oils according to stability, bearing corrosion, detergency, and ring-sticking properties.

No tests are adequate unless correlated with full-scale engine tests, Mr. Georgi warned, it being possible to set up test conditions which will rate all oils as poor regardless of service performance records.

BEARINGS AND BEARING CORROSION. Leonard Raymond, Tide Water Associated Oil Co.

THE use of much higher bearing loads in modern automobile engines causes the refiner and oil compounder to investigate jointly the problem of proper lubrication of these bearings. Corrosion, caused by oil in service at relatively high temperatures is a principal faction.

The field of bearing corrosion investigation still has large unexplored areas. There are indications that oils and bearings have different rates of response or slopes with different operating factors, including various catalytic materials. As more data on the individual operating variables become available, it may be possible to plot the response of an oil or a bearing to changes in these variables and from the various slopes, to obtain a composite picture of change in behavior with operation factors. Until this is done, the experimental development will, of necessity, be largely empirical.

In the meantime, it should be the aim of the engine manufacturer to decrease the burden on the oil and bearings by improved design and materials, in order to permit a greater number of oils to lubricate his engines satisfactorily; while the objective of the oil refiner will continue to be the production of lubricants more resistant to increased severity of operation. Coordinated progress of both industries is necessary for the fullest development of our automotive power.

REQUIREMENTS FOR AIRCRAFT OIL SERVICING EQUIPMENT FOR THE WAR EFFORT. Charles W. McAllister, Sinclair Refining Co.

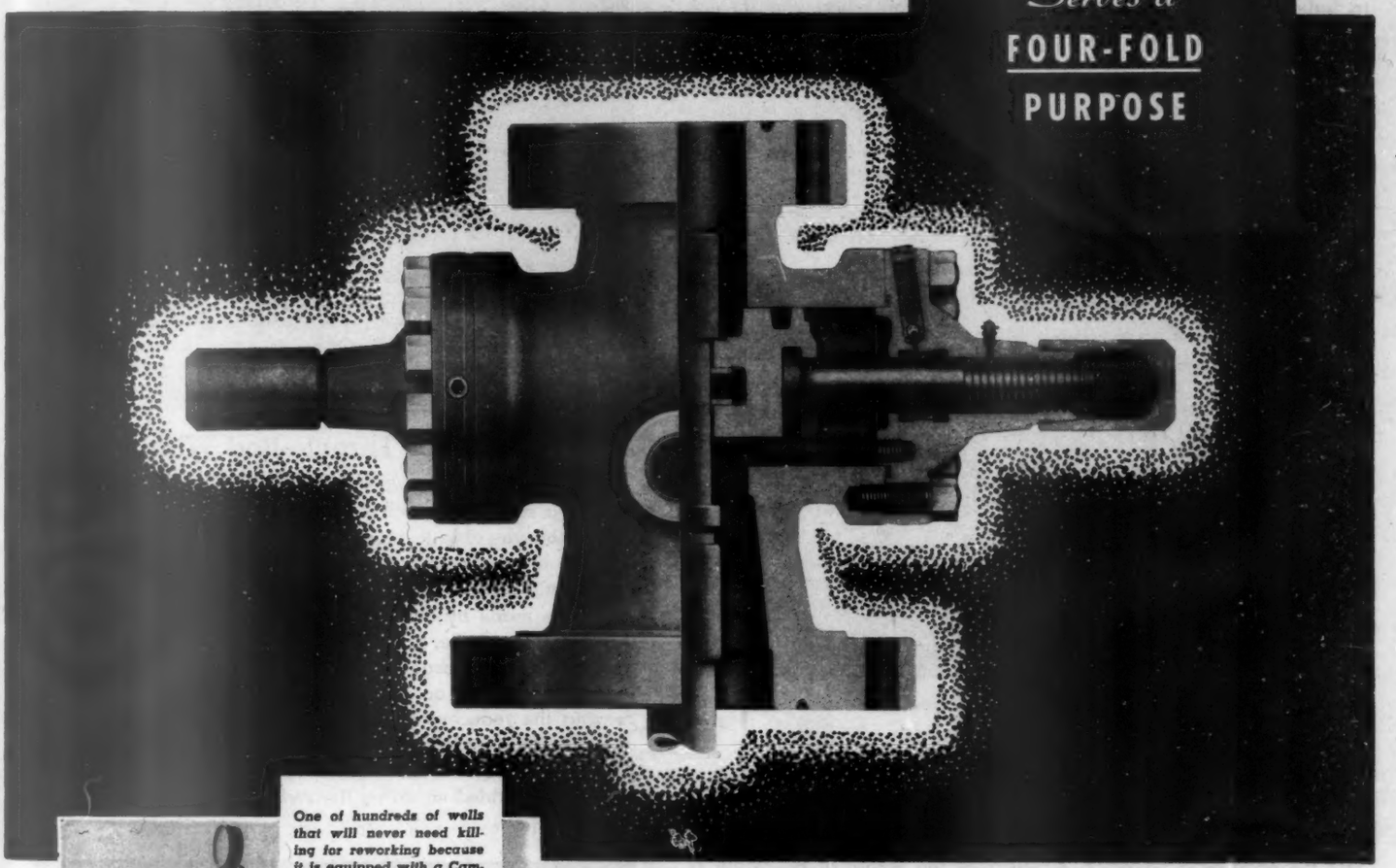
THE design of oil-servicing equipment for airline and cargo planes has been made a definite part of refiners' operations.

Extreme flexibility and versatility in servicing equipment is essential for the efficient handling of aviation oil in aircraft line maintenance work. This is largely due to the many unpredictable situations and conditions that arise . . . for instance, a few examples: (1) It is often not possible to schedule oil services evenly over a 24-hour-day cycle. This is particularly true of refills or oil changes that must be done after other work has been completed. In many cases, this is a last-minute operation that must be done just before the ship is scheduled for departure. (2)

(Continued on Page 44)

Modern tubing heads do more than simply seal and suspend tubing . . .

CAMERON'S RAM-TYPE TUBING CONTROL HEAD *Serves a* FOUR-FOLD PURPOSE



One of hundreds of wells that will never need killing for reworking because it is equipped with a Cameron Ram-Type Tubing Control Head. Note, also, the Cameron Flow Wing on this Xmas Tree which combines all necessary flow wing fittings—wing valve, quick-change choke, flowline union and bleeder connection—in a single compact unit.

These rugged ram-type tubing control heads employ numerous mechanical features of the famous Cameron Blowout Preventer; yet, with all their exclusive performance characteristics and proven design these heads actually cost little, if any, more than conventional "set screw" type tubing heads.

They provide the ultimate in safe, dependable control during every step of completion operations. The full opening vertical bore freely passes drilling-in tools, liner and screen, and packers. Its rams, provided with patented Cameron Self-feeding Packing Elements, assure positive blowout protection while tubing is being run, well washed, packer collapsed, tubing suspended, etc. In fact, the highest pressure wells may, with absolute safety, be washed completely clean with water or oil before hanging the tubing.

They provide four proven methods of suspending and sealing the tubing string: (1) Ram suspension on a hanger nipple as illustrated above; (2) Slip suspension in the top flange of the head, utilizing the rams as a master gate below the outlets to seal the annular space between tubing and oil string; (3) Boll-weevil suspension from the top flange of the head; (4) Suspension from a threaded hanger flange which bolts down on top of the head.

They are extremely practical on any reworking subsequent to the original completion of the well. When used in conjunction with a second Cameron ram-type control unit, tubing may be raised or lowered, or pulled from the well under pressure without killing and without disassembling the tree.

They obviate the need for a cement retainer when making a squeeze job.

CAMERON IRON WORKS, INC.

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California: The Howard Supply Co., Los Angeles

Export: 74 Trinity Place, New York, N. Y.

ASSOCIATION OF WELL HEAD EQUIPMENT MANUFACTURERS CERTIFIED

Rocky Mountain: Mountain Sales & Service, Casper, Wyoming

Member Association of Well Head Equipment Manufacturers

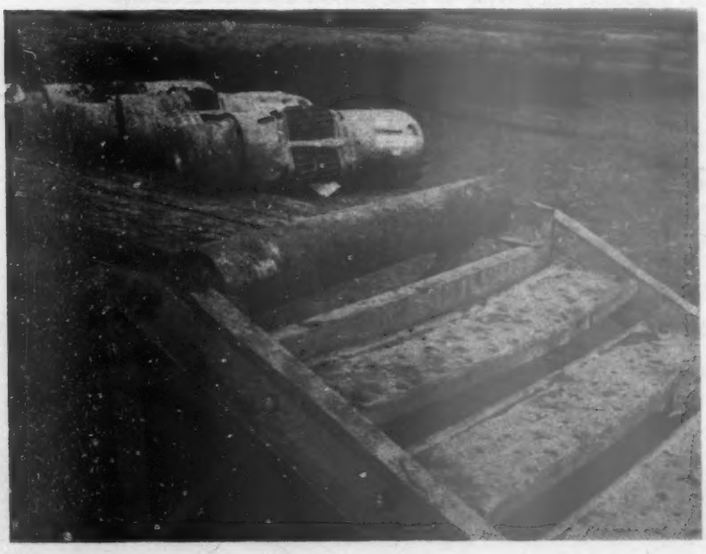
Operating Ideas

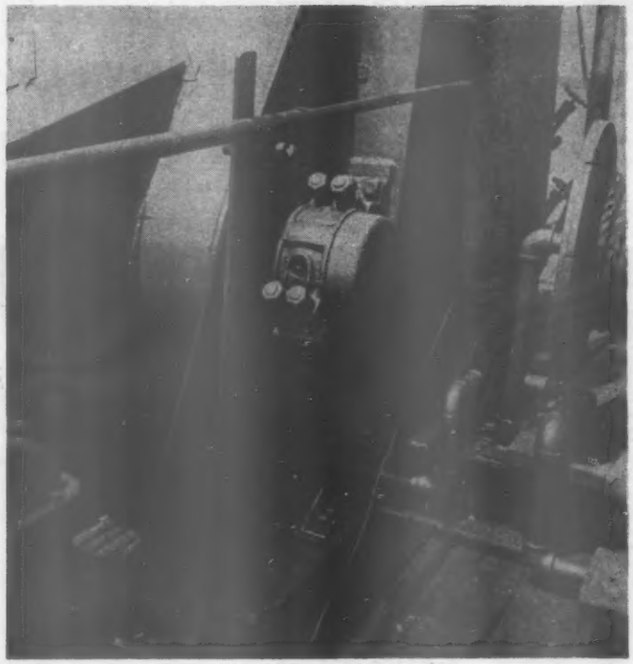
Rack Keeps Pulley Wheels in Order

Instead of having its idle crown-block pulley wheels lie around on its warehouse floor, as usually is the case, a major company operating in Indiana and Illinois provides a special rack where the unused pulleys are kept in order, out of the way, and yet ready for use at any time. The rack consists of two parallel rows of heavy timbers laid end to end and elevated on legs to a convenient height. When pulley wheels are racked the pins are lubricated and wrapped in burlap to protect them from the elements.

Pipe Protects Walkway Edge

To prevent chafing of the winch line or catline and possible damage to the end of the skid or walkway when pulling materials or equipment over the end, a Gulf Coast operator wedged a piece of pipe over the edge as a protector. A 6-in. pipe the length of the width of the walkway was used. A slot slightly narrower than the thickness of the walkway planks was cut lengthwise in the pipe. The slot then was pried open and the pipe forced over the edge of the walkway. The fit was so snug that it was unnecessary to secure the pipe otherwise, making it easy to remove when tearing down the walk.





Pipe Insert Stops Throttle-Rod Whip

By replacing the midsection of the usual ¾-in. engine throttle rod on a rig with a section of 1¼-in. pipe, a Texas drilling contractor was able to provide much greater stiffness and resistance to whipping than usually is obtained in operation of the throttle rod when the lighter pipe is used. The replacement was made by cutting out a section of the small throttle rod from the middle, threading the ends of the remaining rod and fitting in the larger and heavier pipe section of required length by means of 1¼-in. by ¾-in. reducing nipples. By brazing the reducers to the abutting pipe at both ends, the objection to threaded joints can be eliminated. As the heavier pipe section rides on the rod midsupport, the additional weight imposes no added strain on the rod.

Anchor For Concrete Derrick Footings

In sandy soils it sometimes is difficult to prevent corner foundations of pumping derricks from shifting. An operator in Pottawatomie County, Oklahoma, overcomes this difficulty by tying the corner footings together with sections of old drill pipe. The pipe sections, laid in the ground with ends embedded in the concrete footings, provide a secure anchor. Usually it is necessary to lay the pipe only on two sides.

Clean Crude

...is vital to the synthetic rubber program, and to the many products for war manufactured by the petroleum industry.

The rubber program is particularly dependent upon the manufacture of vast quantities of light, refined products. To obtain these stocks, refineries must maintain operations at high temperatures, high pressures and stepped-up through-put rates. The efficient and safe attainment of this end is greatly influenced by the characteristics of the raw crude charge . . . any emulsion content in this charge is a definite refining hazard.

The entire petroleum industry must cooperate in the manufacture of the best refined products possible. Your Dehydro engineer is an authority on crude oil conditioning, and his services are yours for the asking. Let him help you plan your treating plant. There is no better way of obtaining clean crude than the Dehydro Way.

"Dehydro Engineers," in green cars are located in—Great Bend, Hutchinson and Hays, Kansas—Wewoka, Ada, Duncan, Wilson and Oklahoma City, Oklahoma—Kilgore and Wichita Falls, Texas—Tullos and Monroe, Louisiana—Hobbs, New Mexico—Bridgeport, Albion and Mt. Vernon, Illinois—Tulsa, Oklahoma

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ASK THE MAN IN THE GREEN CAR

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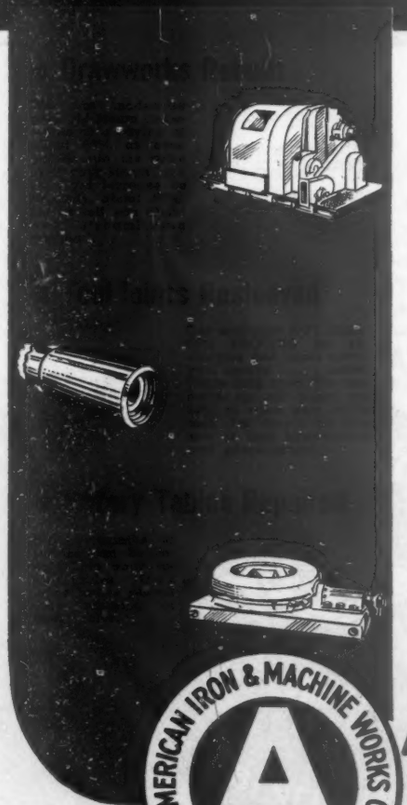

TODAY, it is more essential than ever that you keep your present equipment in operation as long as possible because replacements will be difficult in the months to come, even on priorities.

That's why your nearest American Iron and Machine Works Company shop can be of greater service now than in the past. Our shops and our men are mobilized to repair . . . rebuild . . . or recondition your old equipment. In other words, we can increase the service life of your old equipment measurably at a time when it's needed most.

Each of our shops is equipped with machinery to handle any job. Included in this machinery is a 60" or larger lathe, and a 400-ton or larger hydraulic press. In short, whether you want a tool joint resleeved or an old steam drawworks rebuilt and redesigned, we are equipped to do the job.

Get in touch with your nearest American Iron representative and let him show you how we can help you make your old equipment operate as good or better than new.

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California Representative:
Hopper Machine Works, Inc., Bakersfield, California

S.A.E. ABSTRACTS

(Continued from Page 40)

Refilling, replenishing, and complete oil changes are often made on airships that are not brought near the hangars for repairs or maintenance. Such ships must be serviced where they are parked Today, a stagger system of parking is necessary This means that the oil-servicing equipment must be suitable for maneuvering under and about the ships and able to go distances from the apron to ships that are often parked on the grass or even off the airport. It is essential that a single unit handle completely every phase of this service. (3) The complete oil-servicing unit must be able to service efficiently any type of airship, whether it be a DC-3, C-46, C-47, C-54, C-87 and other cargo transports, or some visiting amphibian, bomber or pursuit plane.

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Metallizing Pump Rods and Other Machine Parts

METALLIZING is a term applied to the spraying process of metallic coatings on worn surfaces of machine parts. This practice is directly an aid to the conservation of strategic metals and at the same time enables refiners to avoid the delay that would be occasioned by priority ratings should new parts be ordered. By this process it has also been possible to salvage and put back in active service many obsolete parts and in some cases castings that are no longer manufactured.

One authority has stated that more than 2,580 lb. of scarce alloys and steels were saved by this process by one petroleum operator over a period of 1 month.

A few of the major applications include building up worn shaftings, worn bearings, reciprocating pump piston rods, steam pump valve rods, diesel-engine pistons, outside packed pump plungers, crankshaft journals, cylinder liners, castings, valve seats, centrifugal pump impellers, diesel-engine exhaust valves, centrifugal pump shaftings, and truck axles.

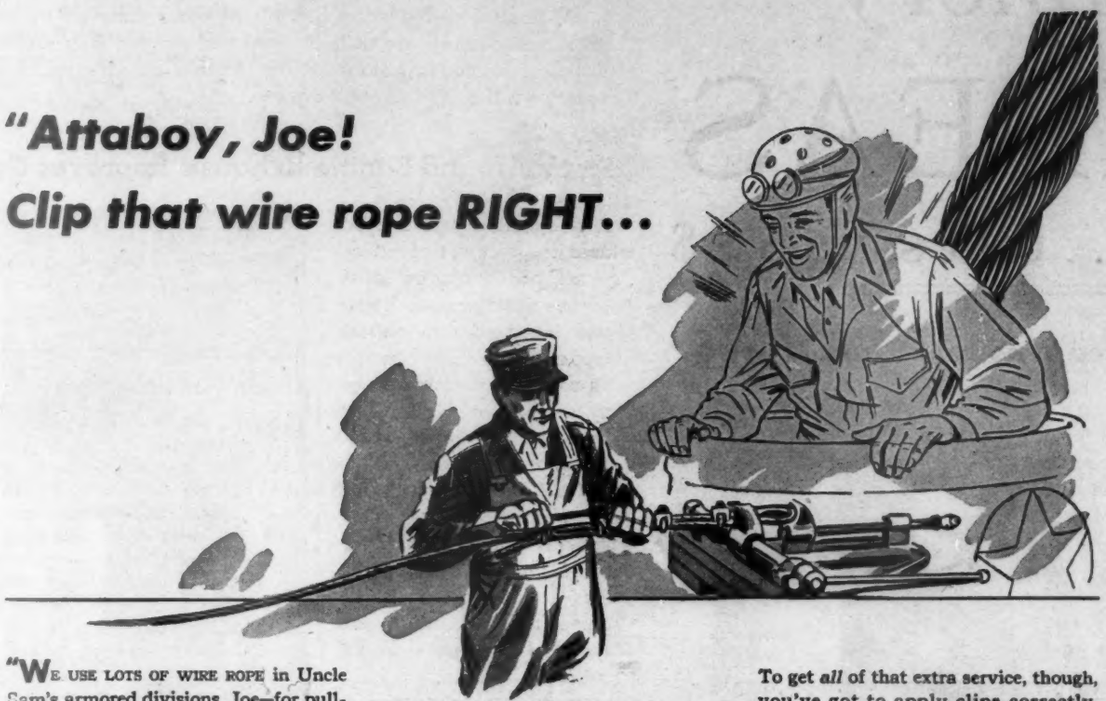
The correct preparation of the surface to be "metallized" is of major importance. Incorrect methods will result in complete failure, as will, of course, poor workmanship in the application of the metal coating and the later machining.

Operators do not always agree on just the exact cut that must be taken on shaftings and pump rods to prepare them for the metal coating to follow. However, it is agreed that satisfactory shafting can be obtained by machining ordinary steel undersize and then building the shafting up to the proper size with an improved metal by metallizing.

Some shops metallize the entire length of a pump piston rod; however, others cover only that part that has been worn by the previous service, allowing additional surface at each end of the rod travel for future rod adjustment when it is placed back in service.

Naturally the depth of the cut taken by the lathe must be controlled by the amount of wear the part has undergone. A sufficiently deep cut must be taken to clean up the surface of the part to be metallized. After the cut has been taken, threads are turned in the open surface at the bottom of the cut. These threads must be smooth bottomed and with torn sides to provide a bond. A minimum thickness of 1/32 in. of metal should be used and provided for beyond the thread. In other words, a minimum cut of 1/32 in. should be taken on the shaft before the threads are cut. In heavy-duty work the thickness of the metal applied in addition to the filling of the "bonding" threads should be at least ⅛ in.

"Attaboy, Joe!
Clip that wire rope RIGHT...



"WE USE LOTS OF WIRE ROPE in Uncle Sam's armored divisions, Joe—for pulling out of tight spots, for towing disabled tanks and trucks, for handling heavy replacement parts . . . And we use it right and *fasten* it right, because we know men's lives in battle may depend on its being just as strong as it's supposed to be!"

Keeping wire rope "just as strong as it's supposed to be" is important *wherever* wire rope is used—on fighting front or production front! One factor in rope strength is correct fastening. *Properly used*, clips make a convenient and satisfactory fastening, developing 75 to 90 per cent of the rope strength.

When we build "Blue Center" Steel Wire Rope here at Roebling, we put in all the *extra* value of 100 years of wire-rope engineering. But even "Blue Center" Steel Wire Rope can't give extra service unless *enough* clips are used in fastening. The table below gives data for clipping "Blue Center" Wire Rope.

NUMBER OF CLIPS REQUIRED FOR "BLUE CENTER" STEEL WIRE ROPES

Rope Diameter	Number of Clips	Spacing of Clips	Length of Wrench
½" to 5/8"	4	3½" to 4¼"	12"
¾" to ⅞"	5	5" to 5¾"	18"
1" to 1⅛"	6	6½" to 7¼"	24"
1¼" to 1⅜"	7	8" to 8¾"	24"
1½"	8	9½"	24"

To get *all* of that extra service, though, you've got to apply clips correctly. Always use a standard wire-rope thimble. Put the clip U bolts on the dead end of the rope. Tighten bolts securely, but *do not crush rope!* Retighten all clips after an hour's full

running time and also at all regular inspections. By following these rules for proper clipping, you'll be helping to keep rope on the job for Victory.

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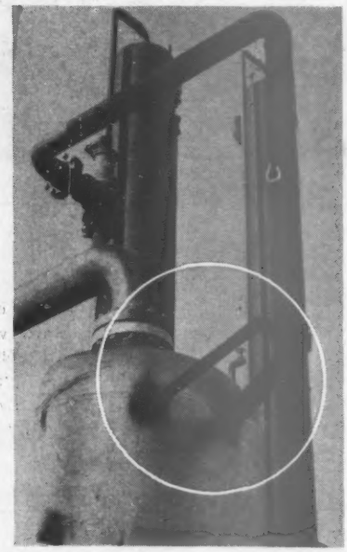
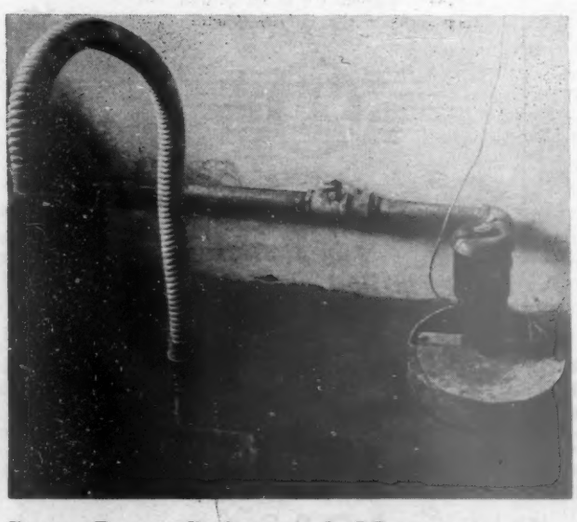
ROEBLING
"Blue Center"
STEEL WIRE ROPE
PREFORMED OR NON-PREFORMED

Refinery IDEAS ... that save $ $ $

Pipe Braced With Angle Iron, U-Bolt

Recognizing the tendency for long lengths of pipe to vibrate in use and their subsequent possible failure, one company has made a standard practice of welding to the nearest rigid steel body the open ends of a U made up of angle iron and against which the pipe is pulled tightly by means of a threaded U-bolt. A typical installation is shown here before insulating.



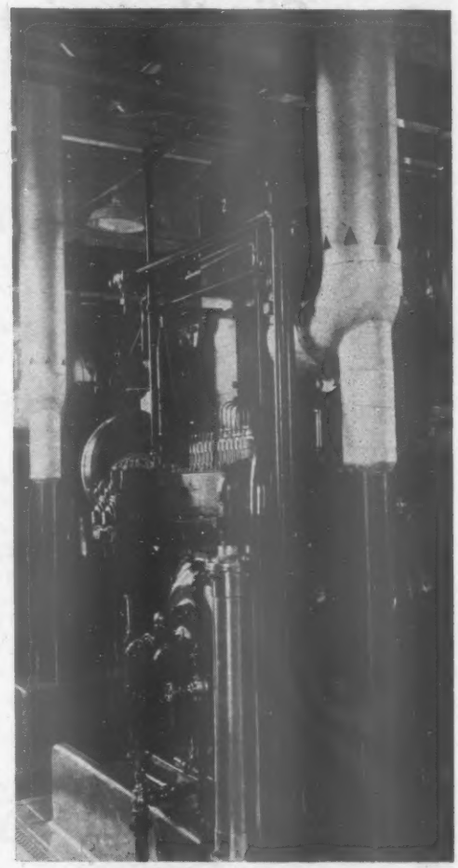


Sump Pump Safeguards Motor

Fearful of a break in the water system which might flood the electric motors in a small, concrete room located below yard grade, one company has installed in the room a small well and float-actuated, electric pump. Normally, the motor and small pump are inoperative but are kept in condition to take any water off the floor of the room which might leak or spill. The pump returns that water to the water-circulating system. The small pump and support for the pump are shown in the center right. Note should be made of the narrow openings cut into the drain pipe and located at the floor level. Normally, these would handle all the water capable of being removed by the pump. Also, since the openings are at floor level and narrow they are more subject to clogging. However, before serious trouble could arise, the water would flow down the pipe through the top.

Stack Around Engine Exhausts Improves Operation

A thin-walled pipe slipped over the exhaust of an internally-fired engine located in a compressor house and extended through the roof of the building has had its cooling effect increased by holes cut around the base of the pipe. These holes can be seen in the picture as triangles and these allow air to be pulled into the annular space between the exhaust pipe and the outside pipe. Both pipes reach through the roof and their ends are located with respect to each other to give a maximum jetting effect. The combined jetting and the stack effect gained by the heating of the air inside the annular space, draws more cool air into the space and thereby improves the exhaust conditions. This also causes more air to be pulled into the room. The effect on the air in the room is to cool the atmosphere for the operator and the engines.



Steam-Heated Water Bath Installed Near Treater

A steam bath, fabricated from a short length of 8-in. pipe, closed at both ends and cut along the side to accommodate a series of immersion compartments, found favor in a corner of a new, modern treating plant. The detail of each immersion compartment can vary with respect to diameter and length, depending upon the use to which it is to be put. Here the compartments were designed to take a 4-oz. bottle as the standard test bottle for the doctor test and corrosion test. The bath is connected directly into the steam line and on the opposite end of the steam connection, the compartment is fitted with a nipple which can be used to connect with another compartment and thereby increase the capacity for heating test bottles.

Short Gas Line Uses Unique Suspension Method

By EDGAR CHESNUTT
Arkansas Power & Light Co., Pine Bluff, Ark.

SEVERAL unusual handicaps had to be overcome by the construction crew of Arkansas Power & Light Co.'s gas department in building a 4-mile pipe line to serve the plant of Batesville White Lime Co. near Batesville, Ark., in hilly, rocky territory.

The line consists of two sections: One a mile of 6-in. pipe from Mississippi River Fuel Corp.'s 6-in. lateral to Batesville, and the other 3 miles of 4-in. line to the lime plant. W. A. Green, manager of the gas department, planned the line and supervised its laying.

The pipe-line construction was all done by regular construction crews of the power company's gas department. Joints were electrically welded, with expansion joints every 800 ft. Despite the many difficulties encountered, not a single lost-time accident was reported.

Machinery and tractors could not be taken into the right-of-way on the top of many hills traversed. Neither could pipe be strung on the hillside. Therefore, all pipe was welded into sections on top of the hills and slid into place down the hillside on each side. Sleeve tie-ins were made on each section on the top of the hill and in each valley.

On about three-fourths of the route, deep ravines and hard flint rock were encountered. Because of the depth and steep pitch of the side walls of two of the ravines, it was necessary to suspend the pipe line on wire cable. About 70 per cent of the ditch on the 3 miles of rocky territory had to be blasted out to get sufficient cover for the line.

Within half a mile of the lime plant, a high, steep hill had to be traversed. It was impossible to get tractors or welding machines on this hill from any direction. It was necessary to weld a section of pipe line 1,200 ft. long and pull it into place up and over the hill. This was accomplished with block-and-tackle equipment and a long line tied to tractors in the distant valley.

Special anchor arrangements were devised for supporting the cable and pipe line where suspended over wide, deep ravines. Heavy guy-line rock anchors were used. Support cable was anchored with proper slack, then side bridle guys added for additional strength. The pipe comes out of the ground a few feet from the anchor, following the ground pitch for additional support. A secondary safety anchor was attached to the pipe itself just under the main cable. A line was attached to each main anchor eye from this safety clamp, which is held in place by compression and stop lugs back of it. In case of a cable break the safety bridle would support the pipe until the cable could be repaired.

Prominent in the construction of these suspension stretches is a safety measure devised by Harry Christen, safety director for the power company. This consists of about 8 ft. of barbed wire wrapped about the pipe near each end, to prevent children, or anybody else, from attempting to do a tight-rope-walking stunt on the suspended pipe.

In attaching the pipe to the cable, galvanized strap clamps were put on the pipe, and an eye hanger attached to the top of the clamp by the top bolt. Hangers were placed 10 ft. apart. The entire sections were welded and fed on to the cable one hanger at a time until the entire span was across. For a 325-ft. suspension, about 2 hours were required to get hangers on and the pipe across.

On this particular suspension section, the sag is about 21 ft. in summer. The sag was measured in weather about 12° above zero and found to be about 10 ft. From the bottom of the pipe to the bottom of the ravine is approximately 100 ft. From the anchor position on one side of the ravine the suspension goes 325 ft. to a hilltop 90 ft. higher than the anchor.

This 325-ft. section of 4-in. pipe line is suspended over a 100-ft. deep ravine. Note how both suspension cable and pipe line are anchored. Dotted section few feet out from anchor on close end of suspension is tangled barbed wire to prevent would-be tight-rope walkers from practicing on suspension

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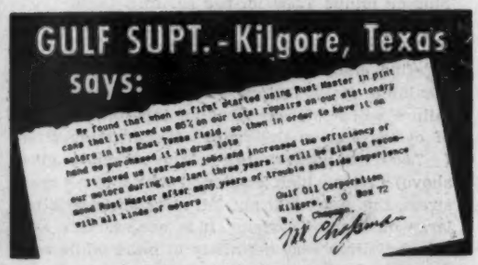
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Progress in METALS

By W. L. NELSON

Design Calculations of Fatigue Strength

THE prevalence of fatigue conditions in the drilling and producing branches of the petroleum industry, particularly drilling equipment, tools, drill pipe and sucker rods, makes any discussion of design under fatigue conditions of vital importance. The following abstract taken from Metals & Alloys of June 1942 pertains to this important subject.

Abstract—J. C. Smith, "Fatigue Strength Design Calculations—The Effect of Range of Stress," Univ. Illinois Eng. Exp. Sta. Bull. Series 334, 49 pages.

This publication includes the most extensive collection of data on the effect of range of stress on fatigue strength which the reviewer has seen. The author of the bulletin has made a number of tests himself and has made a careful study of the literature both American and foreign.

Some Engineering Definitions

In defining range of stress at least three methods have been in use. They can best be defined by an illustration. Let us suppose that during a cycle, the stress ranges from 10,000 lb. per sq. in. tension to 5,000 lb. per sq. in. compression. The range may be defined completely by saying (1) that the maximum stress is 10,000 lb. per sq. in. tension and the range of stress is 15,000 lb. per sq. in. or (2) it may be stated that the maximum stress is 10,000 lb. per sq. in. tension and the ratio of minimum to maximum (numerical) stress is —½, or (3) it may be stated that the cycle of stress is equivalent to a steady tensile strength of 2,500 lb. per sq. in. with an alternating stress superimposed with a range of plus or minus 7,500 lb. per sq. in.

It is the third method which Mr. Smith used in his bulletin. He also finds it convenient to redefine endurance limit, defining it *not* as the maximum stress for any given cycle below which failure will not occur after an indefinite number of cycles, but as the range of alternating stress (±7,500 lb. per sq. in. in the example given above) under which, combined with a given mean stress, the metal will not fail after an indefinitely large number of cycles. (It is necessary to keep this definition very definitely in mind while reading this bulletin. Perhaps "fatigue range," or "endurance range," would have been a little more suitable term than the redefined "endurance limit."—H.M.F.)

In the bulletin two types of diagram are used for the graphical presentation of results. One diagram is called the steady-stress alternating-stress diagram in which the steady-stress component is plotted as abscissas in terms of proportional part of the ultimate tensile strength, and the alternating stress component ("endurance limit" as Mr. Smith calls it) is plotted in proportional part of endurance limit for cycles of completely reversed stress.

The other diagram, which he has found especially useful for cycles of stress in which the maximum stress is compression, is a diagram plotted with maximum stress in the range as abscissas (expressed as proportionate part of static compressive strength), and proportionate parts of the endurance limit under cycles of completely reversed stress as ordinates.

Notch Effects

Mr. Smith has made studies of test data on ductile and brittle materials, on specimens notch-free and on notched specimens. He has made studies of data for specimens under shearing stress and under tension-compression, finding that under repeated shearing stress a notched specimen usually develops a tensile failure, while with notch-free torsion specimens of ductile metal a fatigue failure frequently starts in a shear crack. One of the most interesting facts that he has brought out is that the stress-raising effect of a notch in a specimen applies only to the alternating component of stress in any range of repeated stress in which the steady stress is tension. Hence, in the design of a member having a stress raiser to resist cycles of repeated stress in which the steady stress is tension, the stress-concentration factor, K, is used in the formulas when calculating the alternating stress, but it is not used when calculating the steady stress.

He, therefore, concludes that the steady stress acts in damaging the member more as a static stress, while the alternating component of the range is associated with the formation and spread of a progressive (fatigue) fracture.

Working Stresses for Design

In selecting working stress for the design of a structural or machine part made of ductile material to resist the repeated stress it should be recognized that either of two types of failure may occur: (1) general yielding on the first application of the load, or (2) progressive fracture after many repetitions of the load.

A graphical method for determining working stresses which are based on the possibility of these two types of failure is given in the bulletin.

The three physical properties which are needed in applying the method are as follows: the static yield point (or yield strength); the static ultimate tensile strength; and the endurance limit under completely reversed cycles of stress. The use of this method of determining working stresses is illustrated in the bulletin by applying it in the design of a structural part containing a stress raiser.

The illustration shows the importance of considering the steady and alternating stresses as separate components of the range when they are calculated for a member in which a stress raiser is present.

Effect of Grain Size on Low-Temperature Strength

Abstract: "Effect of Grain Size and Heat Treatment Upon Impact Toughness at Low Temperatures of Medium Carbon Forging Steel," by Samuel J. Rosenberg and Daniel H. Gagon, J. Res. Nat. Bur. Standards, Vol. 27, Aug. 1941. (See Metals & Alloys, Nov. 1941.)

THE effect of McQuaid-Ehn and austenitic grain sizes at heat-treating temperatures and of different heat treatments upon the low-temperature impact toughness of six heats of SAE 1050 steel was studied. Charpy impact tests, of standard Charpy V-notch specimens, were made at temperatures ranging from +212° F. to —108° F.

Under the specific conditions of test described, the following conclusions appear justified:

SAE 1050 steel, either as hot-rolled or as normalized, has low impact toughness. In the hot-rolled condition this type of steel is cold brittle at room temperature and the transition range to cold brittleness occurs at temperatures above +212° F. Normalizing the hot-rolled steel improves the impact toughness at room temperature and above, and the range of temperature at which cold brittleness occurs is lowered, in some cases, to below + 212° F.

Differences in grain size in the normalized steels appear to exert an influence on the impact toughness; the finer the McQuaid-Ehn on the normalized grain size, the lower is the temperature at which cold brittleness is manifested. This trend was not observed, however, with the hot-rolled steels.

Impact toughness is markedly improved by hardening and tempering, but normalizing prior to heat treatment has no effect upon this property.

Impact toughness at room temperature is no criterion of impact toughness at lower temperatures. Fine grain size, either McQuaid-Ehn or austenitic, is no assurance of impact toughness superior to that of coarser-grained steel similarly heat treated (quenched and tempered), particularly as regards the occurrence of cold brittleness.

SAE 1050 steel, in various conditions of heat treatment, does not have a characteristic resistance to impact in the same sense, for instance, as it has a characteristic tensile strength. Each individual heat, when heat treated, apparently has an inherent resistance to impact between certain limits, and this is dependent upon factors not at present recognized.

Metal-Working Terms

Hobbing

This operation is one of the most important methods of cutting gears. The *hob* is a multiple-tooth cutter shaped like a worm gear but having slots cut lengthwise so that the edges of the slots act as cutting points. The faces of the teeth on the worm are relieved in order to give clearance during the cutting operation. The hob revolves against the blank which is to be cut and the blank also revolves at exactly the same rate as it would rotate if it were a finished gear meshing with the hob. Thus the hob cuts a path through a blank which is in perfect mesh with the hob and it is obvious that a worm gear of the same profile and pitch as the hob would result.

Many other arrangements are possible and could be illustrated by description similar to the above. Such combinations as a worm-and-spur gear, bevel gears, spur gears, and many others, are possible and any of the gears cut by a single hob will mesh with one another if the rate of rotation is commensurate.

CO$T Engineering

A WEEKLY FEATURE OF THE OIL AND GAS JOURNAL — RIG OPERATION

OCTOBER 29, 1942

PORTABILITY SHOULD BE BALANCED AGAINST RIG EFFICIENCY

HOW far to go in developing the portability of a drilling rig is a problem confronting the drilling engineer and the contractor. During recent years the evolution in portable equipment has been remarkable although in many instances the attempts to increase the ease of moving has resulted in a substantial reduction in the efficiency of the rig. At the present time some short masts are being used where they shouldn't and some tall masts are used where shorter ones would serve just as well.

Actually, on the present-day portable rigs there is little sacrifice of efficiency. The rigs are designed so the crews can do their work easily and quickly. Working platforms are adequate, hangers for the tongs are properly placed, the draw works function smoothly, and a minimum of time is required to make a trip. However, considerable difference exists in the time required to move up different type rigs and also in the time required to make a trip after the rigs are put in operation.

It is extremely doubtful if a derrick capable of handling doubles of drill pipe will ever be built which will be as easy and quick to raise as a mast designed for singles. This point may be approached but never quite reached.

At the present time the extra weight involved, the necessity of lowering the mast or open-faced derrick and then taking it apart in two sections, the extra truck required, the reassembly of the mast and raising it to the vertical position require considerable more time than the raising of a short, unitized mast.

In Table 1 a summary of the cost of moving two types of drilling units is given. The main difference in the two types is the length of pipe which can be stood in the derrick. The column headed "Double" is for a derrick capable of handling two joints at a time and that headed "Single" is for a derrick handling only one joint.

The difference in time and labor costs as shown in the per cent column are practically alike as might have been expected. However, the moving costs for the mast capable of handling doubles is only 19 per cent over that of the single mast or derrick. Considering labor and trucking costs, $137, or 30 per cent, is saved when using the shorter derrick.

TABLE 1—COST OF MOVING AND RIGGING UP DOUBLE AND SINGLE PORTABLE DERRICKS

	Double portable derrick or mast	Single portable derrick or mast	Difference	Per cent
Total	$607	$470	$137	30
Trucking	262	221	41	19
Labor	345	249	96	40
Time (days)	2.88	2.06	0.82	39

Hourly charge for a drilling rig is a highly variable item but at the present time and or most purposes it is considered as being $15 per hour. Therefore, the saving of $137 in moving charges is obliterated if it requires 9 hours' more operating time for the single derrick rig to drill the well than it does the double derrick. When rig earnings are considered this picture changes so that the advantage is more on the side of the taller derrick. Thus if the average hourly penetration is 20 ft. and the contractor is getting $2 per foot for the work, the loss of an hour's time while making a trip results in the loss of $40 revenue. At such a rate it takes only 3½ hours to wipe out the saving obtained through using a shorter derrick.

The length of time required to make a trip varies widely depending on the condition of the hole, the skill of the crew, and what work is performed while out of the hole. Actually, only the time necessary to pull the pipe and run it back in the hole can be considered as it may be assumed that the other work would have to be done regardless of what type mast or derrick was used. For a single derrick it will take almost 100 per cent more time to pull a string than it will on a tall (double) derrick.

A good rig in fair condition and with a reasonably efficient crew on it should be able to pull about one stand (single or double) per minute and running the pipe back in the hole should require slightly less time per stand. On a well drilled to 2,400 ft. where eight round trips are required, the time consumed in pulling and running the drill pipe in the hole should amount to around 8 hours when a double derrick is used and 16 hours when a single mast or derrick is used.

If it is expected that the difference in drilling time, or trip time, of the two rigs will come close to 9 hours, the taller derrick should be used as it will be more economical despite the higher moving cost.

In addition there is another factor which is more difficult to evaluate but which is extremely important. This is the danger of sticking the pipe which is more prevalent in some areas than in others. In such cases, time is extremely important as the quicker the pipe can be pulled from the hole, the bit changed, and drill stem returned to bottom, the less difficulty is to be expected. Consequently, the saving of a few moments' time while making a trip is extremely important and in such cases the investment and additional moving costs of a double derrick or mast are justified.

Otherwise the decision to use a double or single mast in a particular drilling campaign depends on whether the contractor evaluates his rig time on costs or the income which the rig can earn—a difference of $25 per hour—and the number of trips per well which can be expected. Where time is considered as being worth $40 per hour, the maximum economical depth for a single derrick would be around 1,500 ft. while at $15 per hour the maximum depth approaches 3,000 ft. If the formations are more than moderately hard, maximum depths to which a single derrick could be used would be correspondingly reduced.

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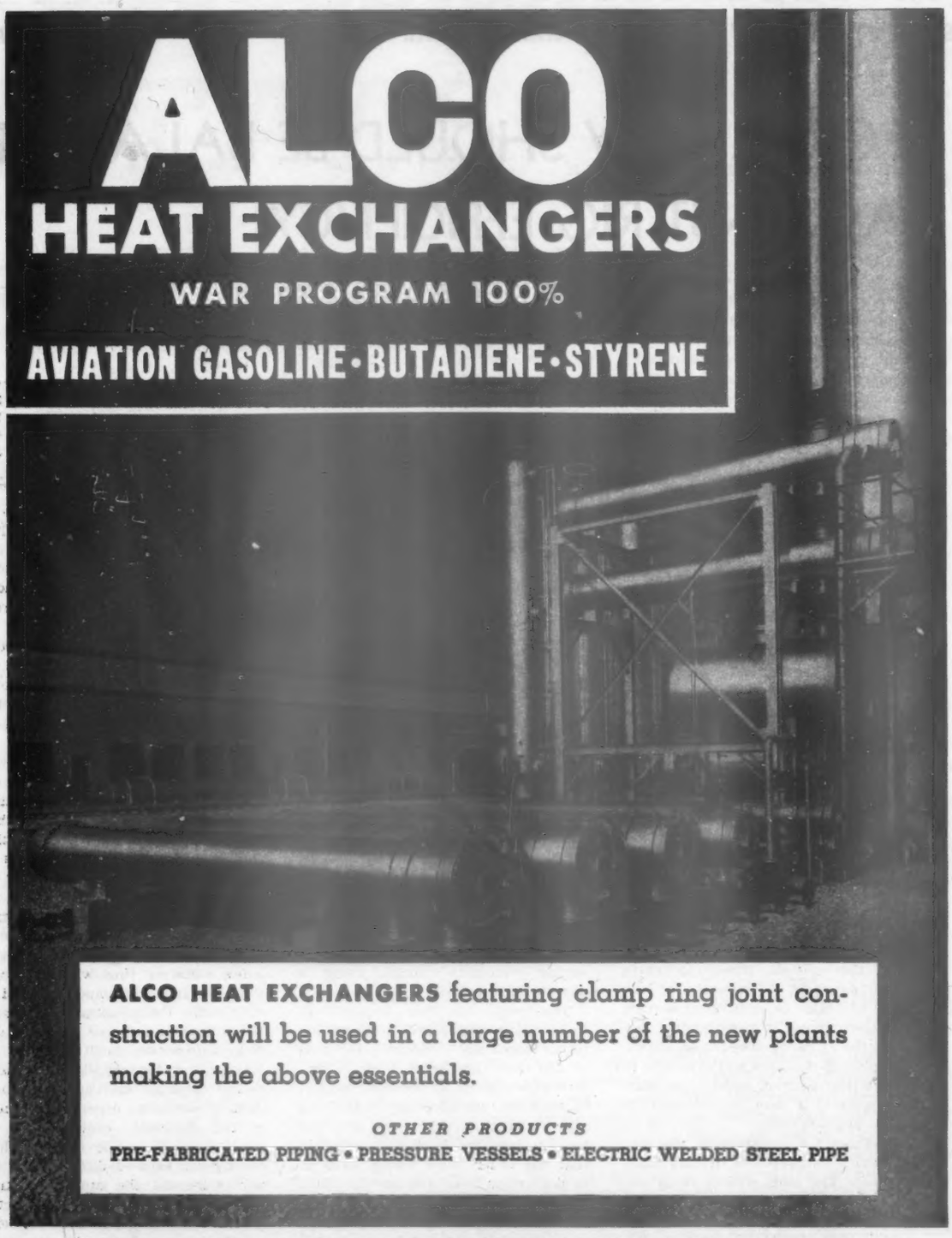

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Engineering Fundamentals

A WEEKLY FEATURE OF THE OIL AND GAS JOURNAL No. 47

OCTOBER 29, 1942

DETERMINING BRAKE HORSEPOWER

BRAKE horsepower was defined earlier in this series as the power delivered at the shaft or belt pulley of an engine to some other machine. It is less than the indicated horsepower of the engine because of the friction and windage losses occasioned by the moving parts of the engine.

There are several variations of method and apparatus by which the brake horsepower may be determined, but in general the variations may be placed in two classes, namely: (1) those employing a dynamometer; (2) those involving computation after direct determination of indicated horsepower and friction horsepower using indicator diagrams. The former method is the more extensively used.

There are two general classes of dynamometers, which are: (1) absorption dynamometers, and (2) electric generators. The prony brake, illustrated in Fig. 1, is a very common type of absorption dynamometer, and is particularly applicable to the measurement of brake horsepower on relatively small engines. This device is merely a friction brake which absorbs the power output of the engine. It consists of a steel brake band, *A*, bent to conform to the shape of the engine flywheel or belt pulley on the flywheel shaft. Wooden blocks, *B*, are placed under the brake band. The band is rigidly attached to the brake arm, *C*, at a point, *D*. An adjusting wheel, *E*, at the other end of the brake band is used as a means of loosening or tightening the brake to change the load on the engine.

The power developed at the rim of the brake wheel is dissipated as heat. For this reason, a means of cooling the rim of the pulley must be provided. The cooling is usually accomplished by allowing a small stream of water to run into the flanged rim of the brake pulley.

It may be necessary to lubricate the contact between the blocks and the face of the brake pulley in order to prevent chattering and seizing of the brake shoes. Grease or heavy oil in small quantities should be satisfactory for this purpose.

The force exerted by the engine, at the end of the brake arm, *F*, is measured on the platform scale, *G*.

As a part of the determination of brake horsepower, the effective length of the brake arm must be known. This length is indicated as the distance *R* in Fig. 1. It represents the horizontal distance between the vertical center line of the brake pulley and the vertical center line of the knife edge at the top of the scale pedestal on which the brake arm rests.

Operation of Prony Brake

The *tare weight of the brake* must be known, so that it may be subtracted from the scale reading to find the net force applied by the action of the engine to the scale. The tare weight may be determined as follows:

With the brake arranged as shown in Fig. 1, loosen the brake band so that the brake pulley turns easily. Rotate the brake pulley by hand for two or three revolutions and take a scale reading while the pulley is turning. Now rotate the pulley in the opposite direction and read the scale again. The average of the two scale readings will be the tare weight of the brake.

The speed of the engine during a test may be determined by means of a revolution counter or a tachometer. A revolution counter is a device which indicates the number of revolutions made by a rotating shaft in a certain period of time. The counter has a beveled tip which may be inserted in a center-bored hole of the flywheel shaft. The speed in revolutions per minute is determined by dividing the total revolutions indicated by the counter by the period of time in minutes. A tachometer is an instrument which indicates directly the speed of a shaft, in revolutions per minute, at any instant and does not require timing with a watch as when using a revolution counter.

The brake horsepower may be calculated, from test data, using the follow equation:

$$b.hp. = \frac{2\pi RWN}{33000}$$

Where

$b.hp.$ = brake horsepower
R = effective length of brake arm, ft.
W = net load on scale, lb. (total load as read from scale minus the tare weight of the brake)
N = speed of engine, r.p.m.
π = 3.1416

Example

Problem.—A brake-horsepower test was made on an engine and the following data were taken:

Speed of engine, r.p.m.	215
Length of prony brake arm, ft.	4.5
Tare weight of brake, lb.	47
Total load on scale during test, lb.	163

Calculate the power output of the engine.

Solution.

$$b.hp. = \frac{(2)\ (\pi)\ (4.5)\ (163\text{-}47)\ (215)}{33{,}000}$$

$$= 21.4$$

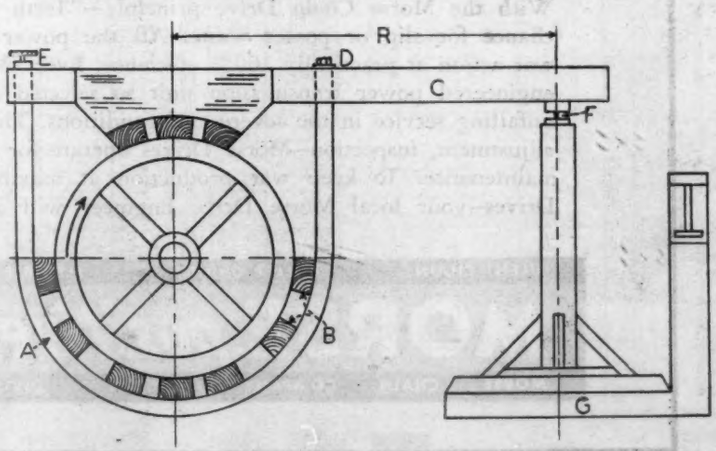

Fig. 1

Series prepared by Glenn M. Stearns, associate professor of petroleum engineering, University of Oklahoma

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Journalog

A FEATURE OF THE OIL AND GAS JOURNAL — No. 19

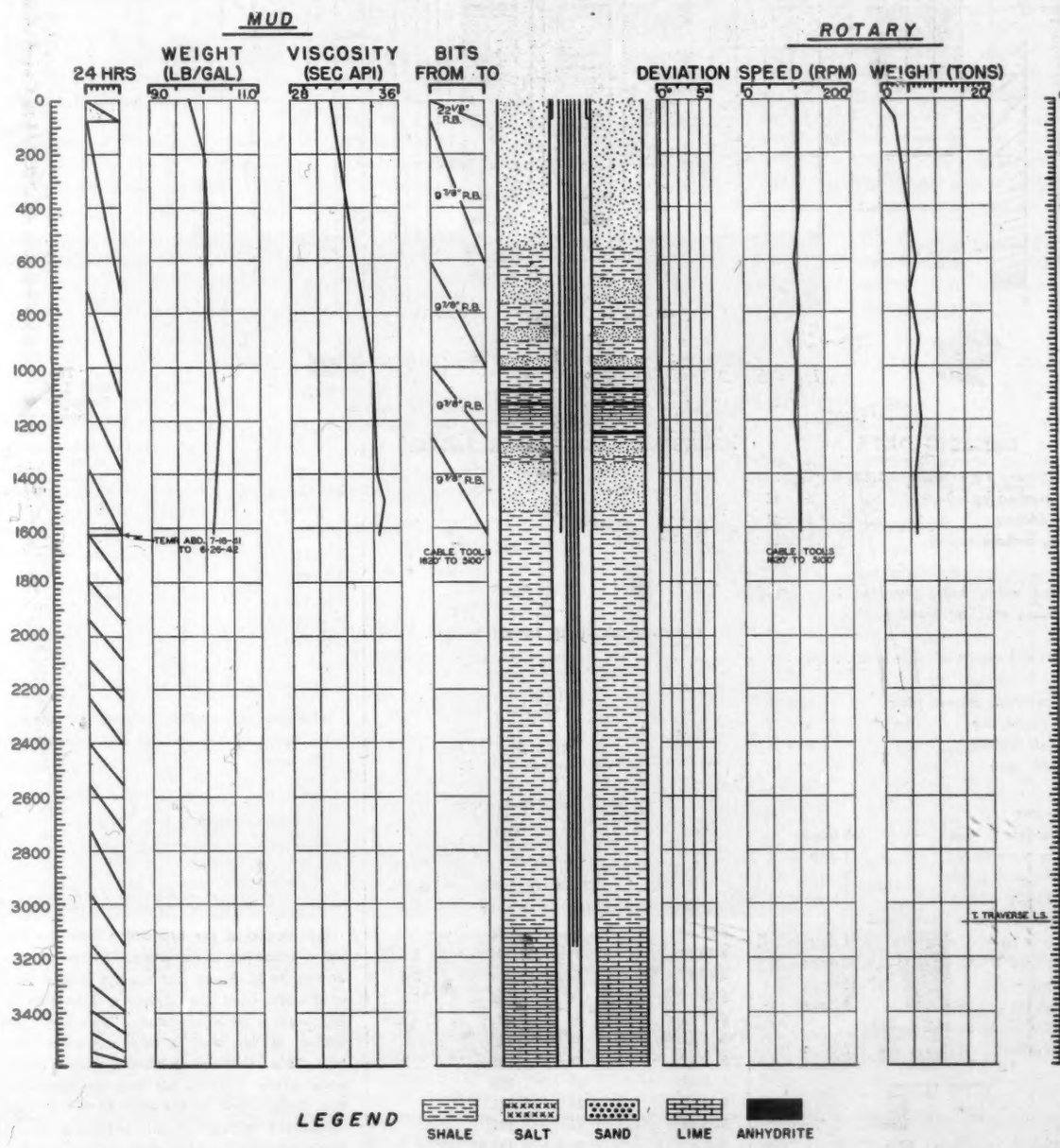
OCTOBER 29, 1942

PURE OIL CO. 1 HAROLD McCLAIN

C E½ SW SW 30-20n-6w
Elevation 1,123 ft.

CONTRACTOR
LUPHER DRILLING CO.

Discovery Well, Winterfield Field, Clare County, Michigan



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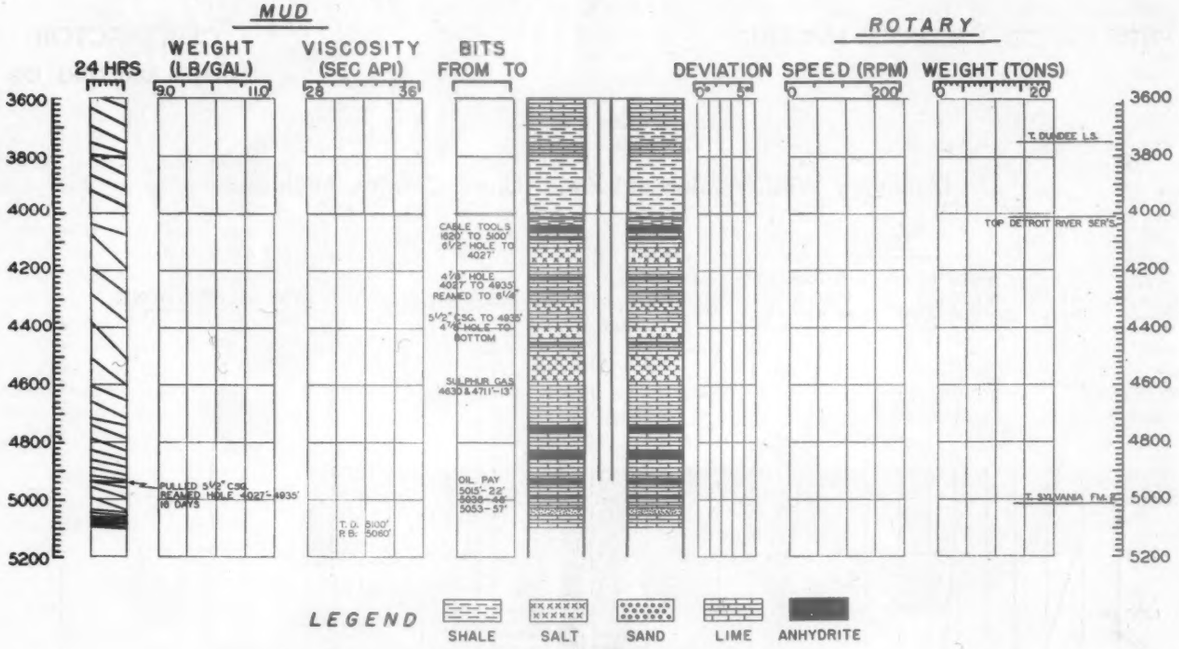
OCTOBER 29, 1942

Discovery Well, Winterfield Field, Clare County, Michigan (Continued)



DRILLING DATA

(Rotary rig surface to 1,620 ft.)

Started rigging up rotary	7-13-41
Started drilling	7-14-41
Set 14-in. surface casing	7-14-41
Completed rotary hole, cemented 7-in. casing and temporarily abandoned	7-18-41

(Cable tools from 1,620 to 5,100 ft.)

Drilled out 7-in. cement plug	6-26-42
Started deepening	6-27-42
Completed drilling	9-4-42
Completed well	9-17-42

Time record:

Drilling rotary hole	4 days
Rigging up rotary	1 day
Running casing, etc.	1 day
Temporarily abandoned	11 months +
Rigging up cable tools and drilling cement plug	1 day
Drilling cable-tool hole	96 days
Reaming	15 days
Running casing, etc.	2 days
Plugging back, acidizing, and completing	7 days

BITS USED

Type—	Size	Number
Rock bits	22⅛	1
Rock bits	9⅞	4

CASING AND TUBING RECORD

Size (in.)	Weight (lb./ft.)	Depth (ft.)	Cement (sacks)
14	41.20	73	50
7	17	1,620	150
5½	15	4,935	*6
2	....	5,150	..

*Mudded with six sacks of fire clay.

COMPLETION

Plug back with lead wool from 5,100 to 5,060 ft.

Oil pay 5,038-48 and 5,053-57 ft.

PRODUCTION DATA

Date—	Time (hr.)	Production— Total (bbl.)	Water or b.s. (%)
8-27-42	13	65	..
8-28-42	24	103	0.5
8-29-42	24	208	0.5
8-30-42	18	168	0.5
8-31-42	24	206	..
9-1-42	24	140	..
9-2-42	24	155	..
9-3-42	24	130	..
9-4-42	24	141	..
9-5-42	24	132	..
9-6-42	24	113.57	..
9-7-42	24	118.98	..
9-8-42	14	110.87	..
9-9-42*	14	240.64	..
9-10-42	24	[2]256.83	0.1
9-11-42	24	[2]275.79	0.1
9-14-42	24	[3]213.62	0.1
9-17-42†	....	..	..

*Treated with 1,000 gal. of acid.

†Treated with 3,000 gal. acid. Potential after acidizing 275 bbl. of 41.5° gravity oil in 24 hours.

[2]Production through 31/64-in. choke.

[2]Production through ½-in. choke.

[3]Production through 1-in. choke.

GEOLOGICAL DATA

Correlation of the production with the Sylvania formation is uncertain. "Sylvania" production in Michigan has always meant sand production, and the Sylvania formation is supposed to be a sandstone. "Sylvania" production in this well is from a porous dolomite. Thin sands resembling Sylvania sands occur below 5,015 ft. but they are unproductive. Such sands in the past have not been considered typical of the overlying Detroit River formation, which accounts for the Sylvania correlation shown.

Griffin-New Harmony Operation

A Cooperative Success

The Griffin-New Harmony plant of Warren Petroleum Corp. is the first example of a cooperative venture for repressuring and gasoline recovery in the Illinois-Indiana area. W. K. Warren, president of Warren Petroleum, was instrumental in effecting the establishment of the cooperative venture and the construction of the plant.

The project involves the gathering of gas produced with the oil from nine horizons in three fields, the compression, extraction and stabilization of the liquids obtained, and the dehydration and return of the residue gas to the producing formations.

One compressor station and remote absorber is located on the Indiana side of the Wabash River (Griffin plant), and the main compressor station and extraction facilities (Crossville plan) is located on the Illinois side. Condensate and absorption lines connect the two installations.

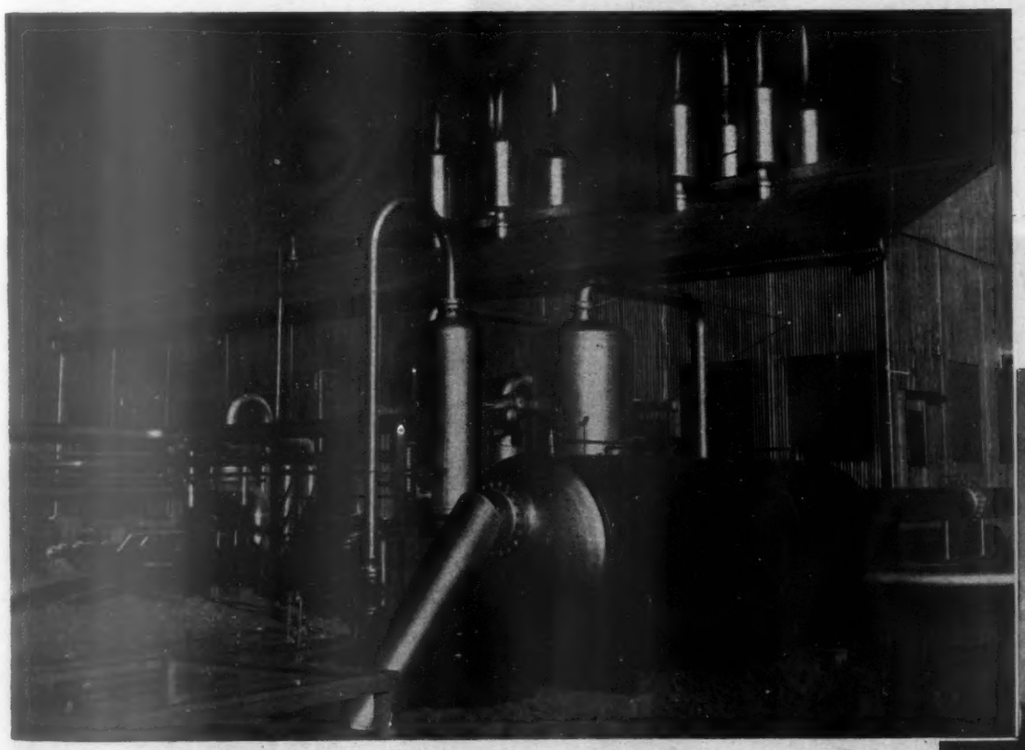
Three-stage compression to a final pressure of 600 lb. is used. The Crossville plant has 4,000-hp. compressor facilities and the Griffin plant has 2,400 hp.

Absorption oil is controlled for a theoretical recovery of 100 per cent of the isobutane. In addition to the gasoline manufactured, the plant will recover normal butane, isobutane and propane with total output of all products being approximately 100,000 gal. daily.

A biography of the author of this article appears on Page 104.

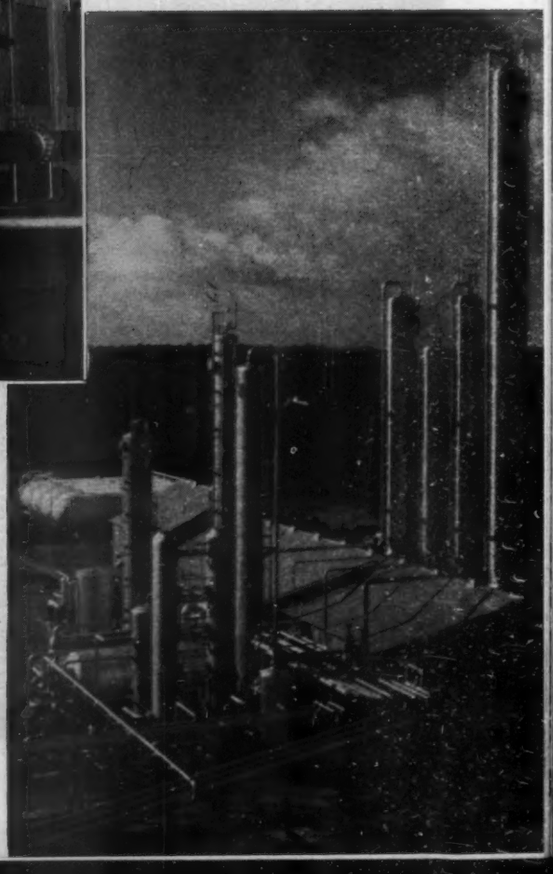
By H. W. HARTS

Vice President in Charge of Manufacturing, Warren Petroleum Corp.



Left: Both horizontal and vertical scrubbers are used on intake-gas lines of the Griffin plant. In the background is the compressor plant

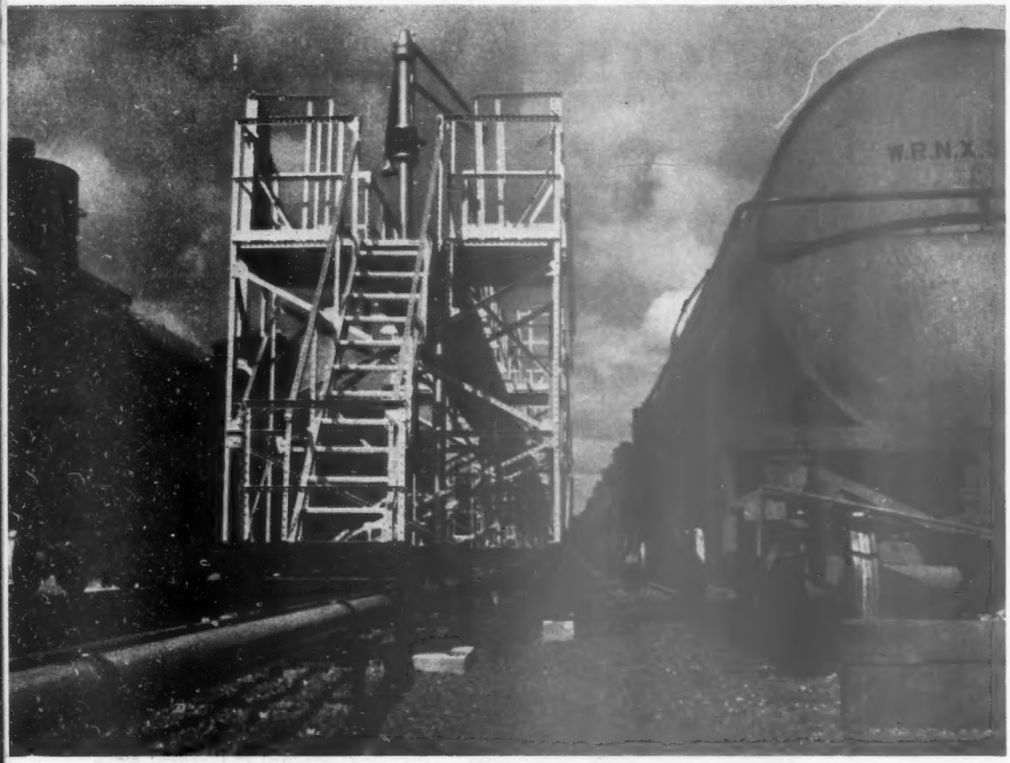
Below: Crossville, Ill., plant. Lines in foreground lead to and from the cooling tower. Portion of storage facilities appear in background



THE new combination repressuring and gasoline plant recently put in operation in the Wabash Valley area in Illinois and Indiana by the Warren Petroleum Corp. is a distinct advancement from a technical viewpoint. In addition it is a managerial triumph as it involves the compromising of the interests of numerous companies owning producing properties in three oil fields in two states. This project, for the maximum utilization of the gas produced with the oil in the area, was put in operation despite the fact that neither Illinois nor Indiana has a conservation law. It is the year's outstanding example of what can be accomplished in petroleum conservation through cooperative agreements and the application of modern production and manufacturing techniques.

In January 1942 the Warren Petroleum Corp., in conjunction with such producing companies as the Continental Oil Co., the Superior Oil Co., the Sun Oil Co. and the Tide Water Associated Oil Co., agreed to install a combination repressuring and gasoline-extraction plant in the New Harmony and Griffin areas of eastern Illinois. The plant was not only for the purpose of manufacturing essential war materials, but also for the purpose of reinjecting all of the remaining stripped gas into the various oil-bearing sands, thus prolonging the life of the producing area. Various estimates indicate that this pressure maintenance will increase the ultimate oil recovery per acre by 50 per cent. Priorities were obtained and construction commenced early in 1942.

The plant is divided into two parts approximately 6 miles distant, one compressor station and the extraction plant being on the Illinois side of the Wabash River and one compressor plant and a remote absorber on the Indiana side. These plants are connected by two absorption-oil lines and one condensate line, and are manufacturing approximately 100,000 gal. of all products daily.



Left: The 24-car loading rack has one side arranged for loading liquefied petroleum-gas products and the other for gasoline

Illinois Plant

This project, known as the Crossville plant, is situated overlooking the Wabash Valley, midway between the New Harmony and Calvin producing areas. The compressor installation, consisting of twelve 300-hp. and one 400-hp. vertical, angle-type compressors, are set back-to-back with elevated suction and discharge headers paralleling each side of the compressor building. Compression is accomplished by three stages to a final pressure of 600 lb. The gas is then cooled, the condensate dropped out, and the remaining desirable hydrocarbons absorbed at the maximum compressing pressure.

The dry or residue gas is then dehydrated in either of two towers, packed with florite, and then returned to the field for fuel or repressuring purposes. Due to the fact that fuel gas is reduced to 30 lb., and many of the input wells take repressuring gas at low pressures, a rather complete dehydration plant had to be installed to prevent the forming of hydrates.

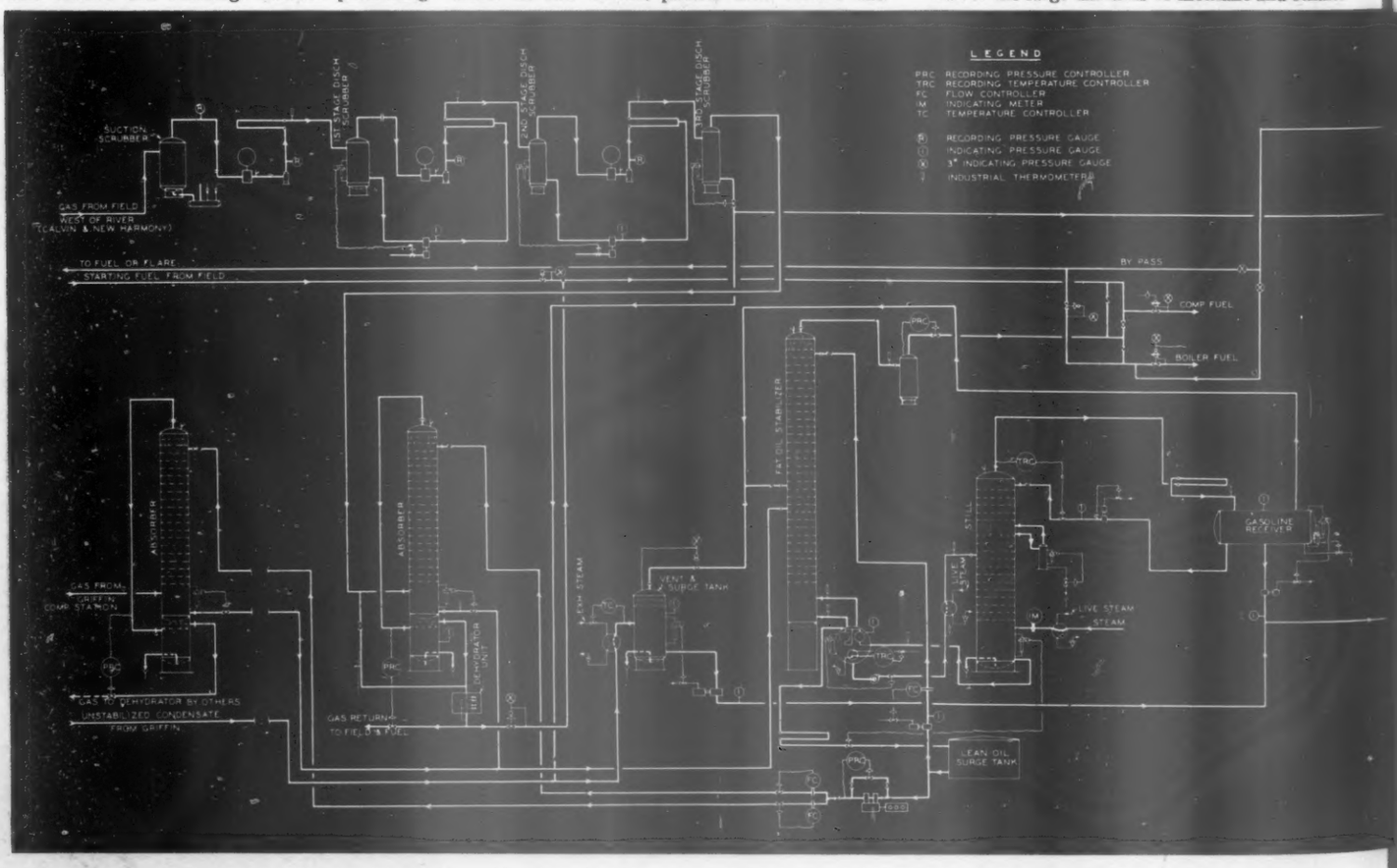
Two 36-in. towers 30 ft. high, packed with solid florite, operate alternately on approximately 12-hour cycles. The nonoperating tower is regenerated through the use of gas preheated to 350°, which gas is then cooled, hydrates dropped out and returned to the operating dehydrator. Between 60 and 100 gal. of water are extracted each 12 hours in depressing the dew point to under 0° F.

Distillation Unit

All raw gas, at 600 lb. pressure, passes through a 4 by 54-ft. absorber containing 18 trays. The absorption oil is furnished by two electrically driven duplex reciprocating pumps, direct-connected to 75-hp. motors, and is regulated by rate of flow controllers. Theoretical 100 per cent isobutane extraction is the point at which the absorption oil is controlled. Following is the analysis of both the incoming and stripped gases in volume per cent:

	Per cent	
	Incoming	Residue
Methane	62.16	81.87
Ethane	13.21	12.71
Propane	12.69	5.42
Isobutane	1.90	
n-Butane	5.36	
Isopentane	1.45	
n-Pentane	1.73	
Hexanes plus	1.50	

Due to the large amounts of methane and ethane



Above: Electric motor for driving deep-well centrifugal pump is mounted on raised platform to place it above high-water level of Wabash River overflows

absorbed at 600 lb., a saturated oil stabilizer, containing 26 trays, was installed from which the oil enters a specially designed heat exchanger containing three multitubular heat exchanger bundles and one steam preheater bundle. These exchangers are contained in a 10 by 20-ft. tank so divided as to cause conventional counterflow and the steam-preheater bundle controls the temperature on the base of oil stabilizer.

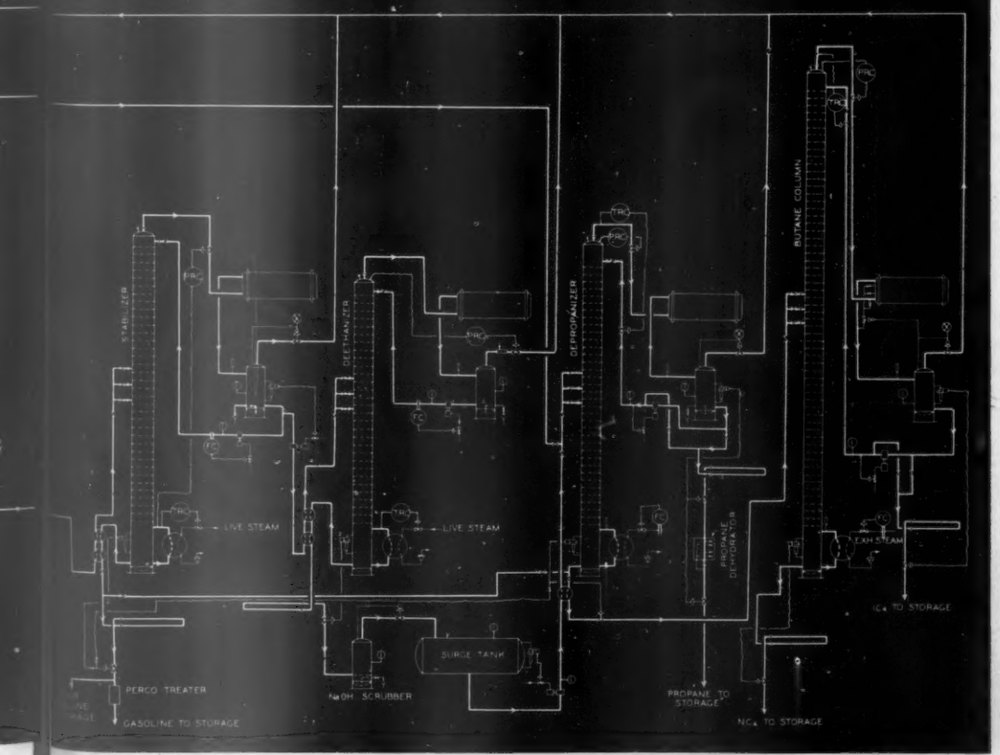
An average test of the vapors from this column shows the following constituents by volume:

	Per cent
Methane	43.51
Ethane	31.83
Propane	24.66

This fat-oil stabilizer is refluxed by cool lean oil, regulated by a rate of flow controller and pumped from the lean-oil surge tank. The waste vapors are utilized, both as boiler fuel and for compressor operation. The fat oil which has been denuded of a large portion of undesirable constituents is pumped from the above-mentioned heat exchangers by 4-in. electrically driven pumps into a conventional 5 by 54 ft. 6-in. combination still and dephlegmator. The top temperature is automatically controlled by condensate from the compressor accumulator tanks, from which the lighter vapors have been previously flashed into the lean-oil stabilizer. This condensate, of course,

Above: H. J. Williamson, field foreman; J. W. Kearney, plant superintendent; Rex Phelps, field superintendent; L. E. Myers, assistant field superintendent, and Paul Jones, construction superintendent, Frick-Reid Supply Corp.

Below: Flow diagram of the main extraction plant at Crossville, Ill., where not only gasoline but normal butane, isobutane, and propane are recovered

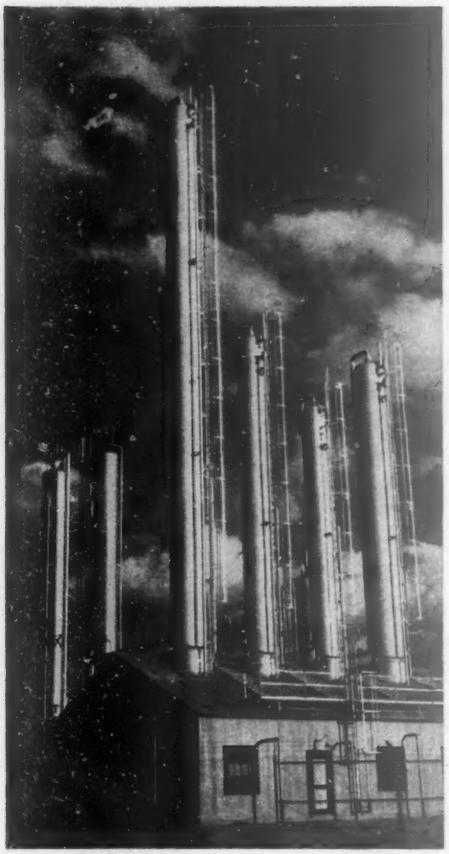


contains a large percentage of the total products heavier than butane. The additional unused condensate is pumped directly into the primary fractionating column.

The lean-oil pumps not only supply oil to the above-mentioned absorber, but also to a remote absorber located 6 miles away at the Griffin compressor station.

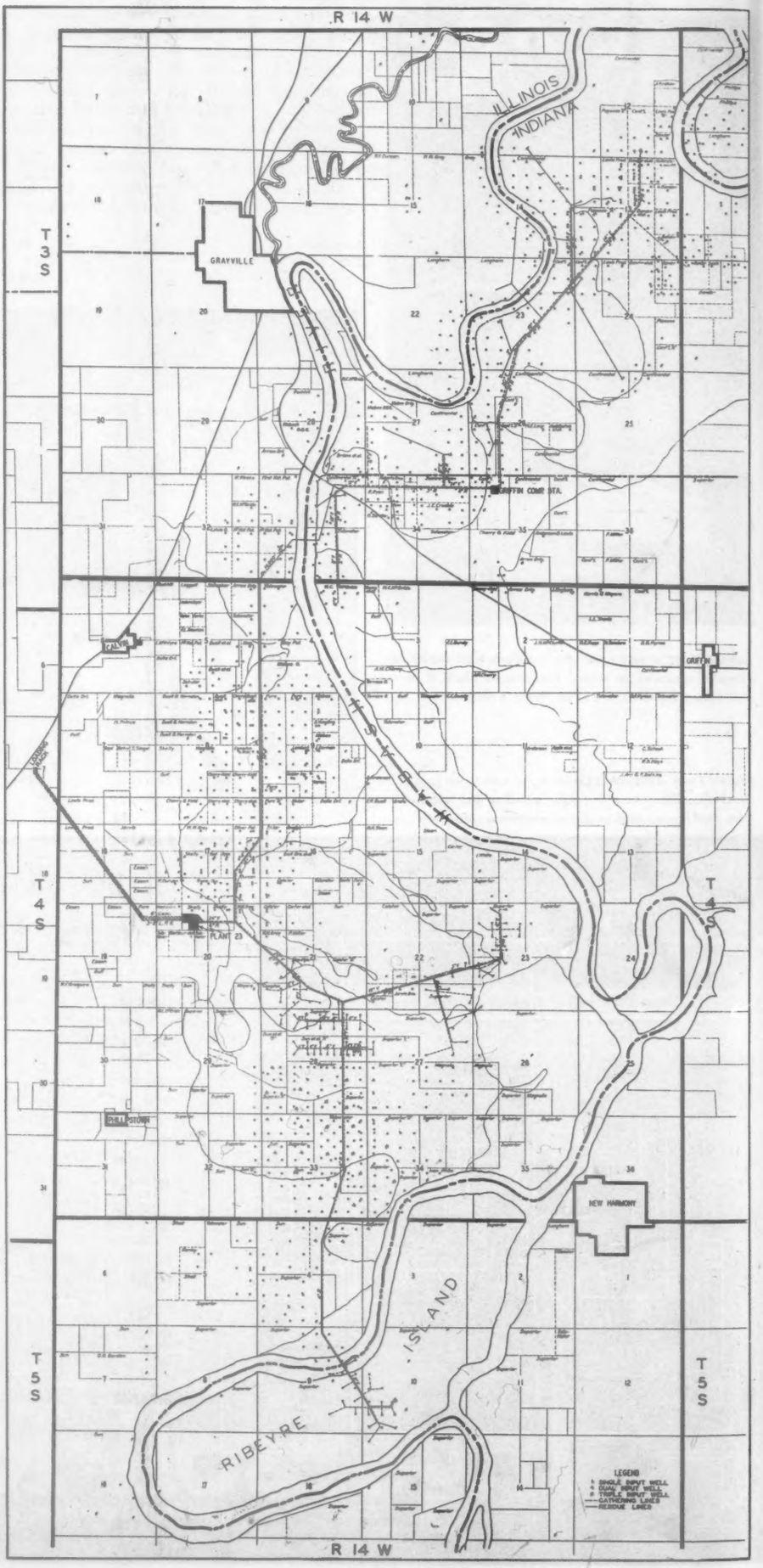
Treating

All products manufactured are treated to remove hydrogen sulfide and the specification gasoline is also treated for mercaptan sulfur. The alkaline wash treater consists of a vertical tank 5 ft. 6 in. by 14 ft. which the gasoline enters after having passed through a knothole mixer in contact with the caustic solution. It then enters a horizontal settling tank, from which it passes through a sand and gravel filter to assure the elimination of all entrained alkaline solution. From this filter, the stream passes through a solid copper chloride treating tank and to storage. The copper chloride treating system consists of two 5 ft. 6 in. by 10-ft. tanks, one of which is operated and one of which is standby. This unit is so arranged that the flow can be either upward or downward as the operator desires. The liquid petroleum gases in a mixture pass through an alkaline solution similar to the gasoline and then to the fractionating towers.



Above: Bases of part of the process equipment are housed because of temperature, characteristic of the area, which would affect their operating control. Columns with bases housed are: deisobutanizer, depropanizer, deethanizer, and primary fractionator. Back of the building at the right are the absorber and fat-oil stabilizer. Barely visible behind the building is the fibrite dehydrator

Right: Map of the Crossville-New Harmony and Griffin areas in the Wabash River bottoms of Illinois and Indiana showing location of plants and gathering system



Fractionation

A four-column setup has been installed manufacturing commercially pure propane, isobutane, normal butane and specification gasoline. The raw product, both from the rundown tank and the excess compression gasoline, are introduced by a close-clearance pump into the primary column from which vapor pressure controlled gasoline is taken from the base and all LPG products taken overhead.

Excess overhead is pumped from the primary reflux tank by an automatically controlled close-clearance pump to the No. 2 column where ethane, dissolved methane and some propane are lost overhead. This column is 30 in. in diameter, contains 30 trays and was designed to operate at a pressure of 450 lb. The overhead propane is controlled so that a minimum amount is lost and the reflux still left so that the critical temperature is above the reflux temperature.

The three liquid petroleum gases then pass through the above-mentioned alkaline wash and into a 5 by 20-ft. settling or surge tank from which it is pumped into the depropanizer. This column is 3 ft. 6 in. in diameter and contains 36 trays and was designed for a working pressure of 290 lb. The excess propane from the reflux

15 GAS-POWERED UNITS

Above are two views of the twelve Ingersoll-Rand XVG compressors. Below is a view of the three generator sets powered by PVG gas engines.

Ingersoll-Rand Compressors and Engines at new Illinois Plant Operated by Warren Petroleum Corporation

The combination natural gasoline and repressuring station operated by the Warren Petroleum Corporation in Illinois is a new and important link in our country's war program to expand the production of high octane gasoline.

Twelve 300-hp Ingersoll-Rand Type XVG 3-stage gas-engine-driven compressors will receive gas at 10" Hg. vacuum, and deliver it at pressures up to 400 lb per sq in. for injection back into the sand. Electric power for the plant is furnished by three generator sets, each powered by a 185-hp Ingersoll-Rand Type PVG gas engine having interchangeable parts with the XVG's.

Ingersoll-Rand 4-cycle oil-field units are built in standardized sizes from 75 to 800 hp. In addition to the famous gas-engine-driven compressor line, power units are widely used for driving generators, geared or direct-connected pumps, and reciprocating pumps.

Other I-R products for oil-field and refinery work include all kinds of Compressors and Pumps, Diesels, Steam-Jets, Pneumatic Tools, and Rock Drills. There is an I-R branch office in every producing center.

Ingersoll-Rand

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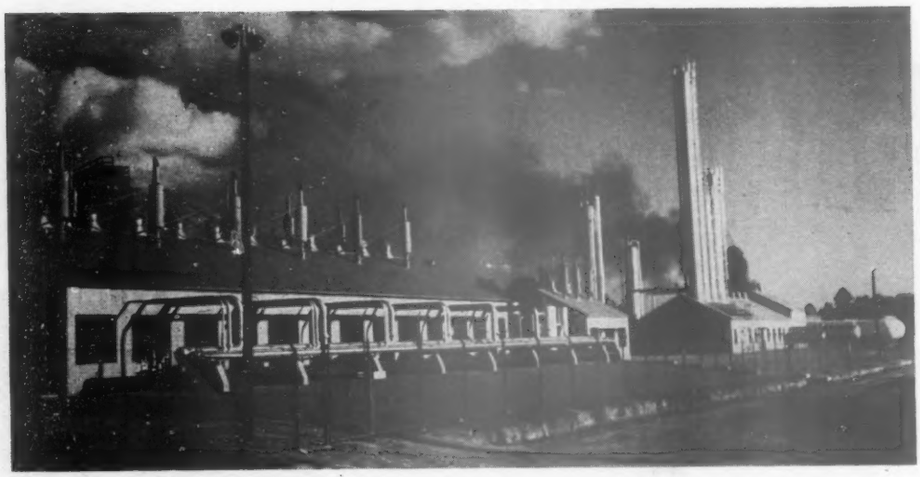


Left: Crossville plant showing compressor building and manifolds at left and processing units at right

automatically enters a florite dehydrator and then passes to storage.

The base product, consisting of butane and isobutane, enters the butane splitter under its own pressure, where commercially pure isobutane is taken from the reflux tank and normal butane from the base of the column. The butane splitter is 4 ft. 6 in. in diameter and contains 60 trays. Each of the products from this column, after cooling, go direct to storage.

Auxiliary Power

Electric requirements are generated by three 156-kva., three-phase, 440-volt generators direct-connected to four-cylinder, vertical, four-cycle gas engines. Electricity is used for pumping water, absorption oil, and for floodlights throughout the plant, which have been installed in accordance with recommendations made by the War Department. The jacket-water cooling is accomplished in closed coolers and the lubricating oil is cooled separately by small electric-driven pumps.

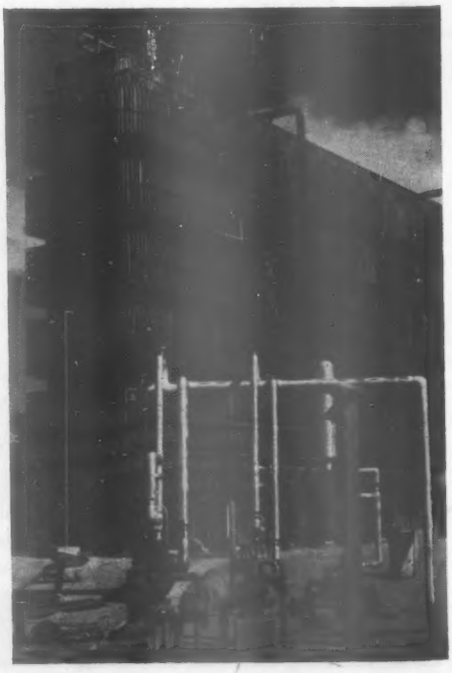
Steam is generated by seven 125-hp., 300-lb. oil-field-type boilers, which are equipped with automatic level and pressure controls. These boilers are fed by two 10 by 5½ by 12-in. duplex, side-pot pattern steam pumps, equipped with pump governors for controlling water level in the boilers. Treated feed water is automatically fed through a heat exchanger into an elevated feed-water tank, from which the boiler-feed pumps take suction.

All cooling for the plant and compressors is done in a 32-tray, natural draft, cooling tower with an over-all height of 54 ft. The specifications called for a 7° approach to the wet bulb, with a 5-m.p.h. wind. Water is furnished to this tower by two 5,000-g.p.m., single-stage, centrifugal pumps, direct-connected to 125-hp. induction motors.

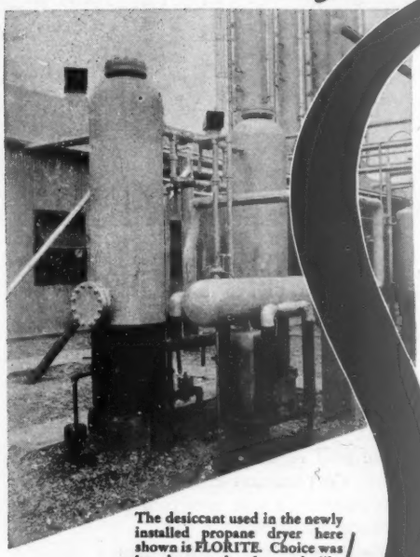
Gasoline storage consists of eight 1,000-bbl. "blimps" and one 20,000-bbl. spheroid, all of which are capable of holding 35-lb. R.v.p. gasoline.

Butane storage consists of six 10 by 45-ft. horizontal tanks with a working pressure of 114 lb., A.P.I. code. Isobutane is stored in smaller tanks of this same working pressure, and has a total

Cooling tower at Crossville plant



For sustained performance this propane dryer is filled with *Florite*



The desiccant used in the newly installed propane dryer here shown is FLORITE. Choice was based on study of records like that given below.

DEHYDRATION of many liquids and gases is better done, at much lower cost, by the use of FLORITE DESICCANT.

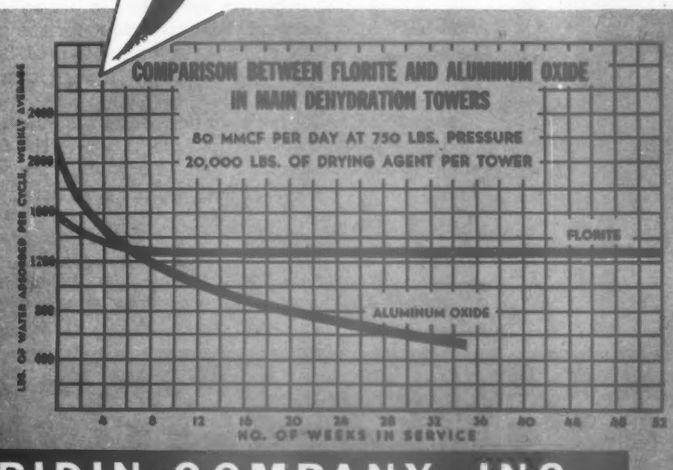
A propane dryer in an important new natural gas plant is the subject of our illustration. Natural gas, propane, butane, gasoline, air, nitrogen, carbon dioxide, refrigerants of various nature, and other fluids are successfully dried with FLORITE.

FLORITE selectively adsorbs 4 to 20% of its weight of water—is regenerated by heating to 350° F.

Even where higher initial capacity is obtained at greater cost, the lasting, sustained effectiveness, of FLORITE far outweighs this momentary advantage, as indicated in the graph herewith. The largest natural gas dehydration plant and one of the best known chemical manufacturers in the world are satisfied users—names on request.

Correspondence is invited.

The long-sustained effectiveness of FLORITE in adsorbing relatively large amounts of water, is shown by one of the curves at the right. The other curve is for comparison. Specifically, the graph relates to dehydration of natural gas, and is based on data furnished by the user. It will be seen that after the first few weeks, the results were more and more favorable to FLORITE desiccant.



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THE NEWER REFINERY SPECIFICATIONS

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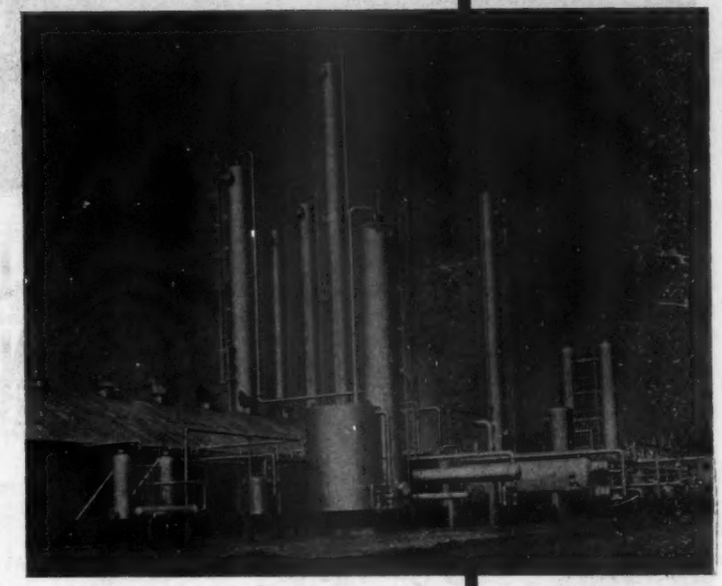
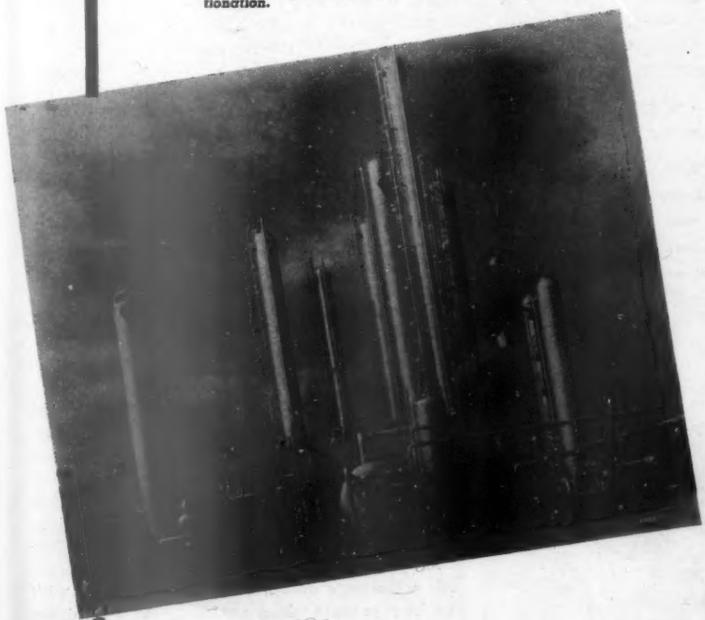
. . . are a welcome challenge to the knowledge and experience which enable us to design, engineer and build successfully and economically for clean, close fractionation.

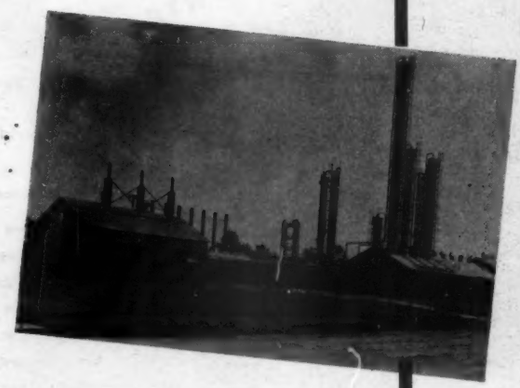
●

Towers must be designed for economical as well as efficient operation. Our process engineers were applying bubble towers to petroleum fractionation problems as early as 1924.



Continuously for nineteen years our engineers have specialized in the application of bubble towers and heat exchangers to problems in close fractionation.





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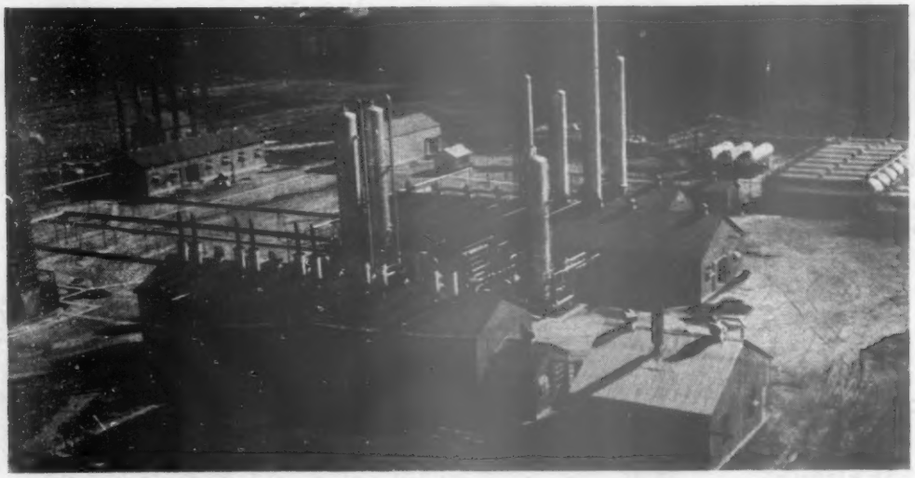


Left: General view of Crossville plant from nearby derrick

capacity of 48,000 gal. Propane storage, amounting to the same capacity as the isobutane, consists of four 7 by 40-ft. horizontal tanks with a working pressure of 225 lb., A.P.I. code.

Each product has its own line to a 24-car loading rack, located approximately 2½ miles west on the New York Central Railroad. Modern facilities for the truck loading of each product has been installed at the plant site.

On the Indiana side of the Wabash River, a repressuring plant, containing 2,400 hp., was constructed for repressuring the various wells in the Griffin oil pool. This station compresses the gas from 10-in. vacuum to 750 lb. pressure through three stages of compression. The gas is then processed in an absorber and dehydrated by means of a diethylene glycol contactor where the dew point is depressed to 0° F. The condensate formed during compression is pumped to the processing plant through a 2-in. line, while both the stripped and saturated mineral seal oil to and from the absorber are transported through 2½-in. lines.

Cooling water, being available in almost unlimited amounts at this location, made the erection of a cooling tower unnecessary. Two wells, each with a capacity of 800 g.p.m., were drilled and furnish all of the cold water necessary. The water for engine-jacket cooling is from recirculation in the basin water, and all excess water drains back to the river. All equipment at the Griffin station was elevated approximately 8 ft. above the ground level, in order to protect it from high water during flood stage.

Gathering System

A total of 170 miles of lines, varying in size from 2 to 24 in., was necessary to collect and return the gas from the 1,000 producing wells. The construction of this system was greatly hampered by the periodic flooding of the Wabash River and the numerous small rivers which continually transverse the valley. Each of these small tributaries came under the state law prohibiting the obstruction by pipe line of any flowing water so that each crossing had to be higher than the highest known water level.

In the interest of conservation, input wells were prepared so that dual and even triple injections could be made at each well head. However, gas to each individual sand is measured separately. All meters are installed on elevated platforms for protection against flood waters. These platforms vary in height from ground level to 20 ft. and may contain as many as four meters.

Each of the three producing areas has its own repressuring engineer, whose duty it is to supervise the actual injection of stripped gas into the input wells. These engineers, while entirely cooperating with the Warren Petroleum Corp., are actually under the jurisdiction of the various producing companies operating in their particular area.

All condensate accumulators are equipped with high level cutouts which automatically shut down the compressors, should the liquid reach a dangerously high level. Each compressor is equipped with shutdown devices, should the engine become overheated or should they experience failure in lubricating-oil pressure. At two advantageous locations in the plant yard are located electric switches which, in one operation, shut down the compressors, turn the fires from the boilers and open the boiler snuff lines.

Floodlights were installed for maximum efficiency, in accordance with requests and suggestions by the federal Government which also has been instrumental in all antisabotage protection.

J. W. Kearney is the superintendent of the plant and Lewis Myers assistant superintendent.

HELPING KEEP LIQUID LEVELS UNDER ACCURATE CONTROL

At New Petroleum Plant

● The above photograph shows a MAGNETROL Liquid Level Control on a scrubber at the new Warren Petroleum Corporation plant at Crossville, Ill., one of the most modern plants of its kind in the world. All scrubbers at this plant are MAGNETROL-equipped.

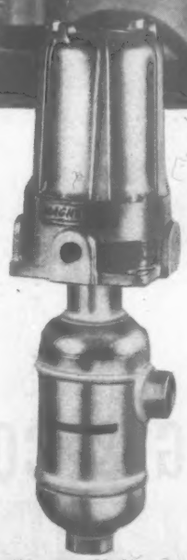
This application is but one of the many uses to which oil and gas companies are putting this dependable, accurate liquid level control. The complete absence of bellows, packing, diaphragms or electrodes eliminates the major sources of trouble encountered with ordinary liquid level controls.

Whatever your problems of liquid level control, consult with Schaub engineers. Write today, stating your problem.

TYPICAL MAGNETROL APPLICATIONS

- ✓ Level alarm and engine shut-off on high and low pressure absorber and reabsorber residue scrubbers.
- ✓ Liquid level controls on sales gas scrubbers.
- ✓ High level alarm on inlet scrubbers.
- ✓ Level alarm and engine shut-off on 2nd and 3rd stage recompressor suction units.
- ✓ Low level alarm on de-ethanizer reflux accumulator.
- ✓ High level alarm on suction traps.
- ✓ High level alarm and engine shutoff on propane compressor inlet scrubber.

FRED H. SCHAUB ENGINEERING CO., INC.
327 W. Huron Street, Chicago, Illinois



No. 750-EP Magnetrol

This is a completely welded control unit with explosion-proof head for all oil and gas piping or applications in hazardous locations. Maximum pressure is 750 lbs. Maximum temperature 750° F. Available with one or two level stage control. Operating differential ¾" to 3". One of many different models.

Griffin Operation Incorporates New Conservation Principles

By CHARLES FRYE
Division Petroleum Engineer, Continental Oil Co.

A variety of reservoir conditions complicated the repressuring project recently placed in operation in the Griffin field, Indiana. Involved was a multiplicity of producing horizons with great differences in pressure, permeability and types of natural drive.

AN outstanding example of cooperation among oil producers for increasing the ultimate recovery of oil, the conservation of gas, and the extraction of natural gasoline, in a project which promises to contribute much vital material to the war effort, has been inaugurated by Continental Oil Co. in the Griffin field, Gibson and Posey counties, Indiana.

Return of gas to producing formations in the Griffin field was started during September 1942. There are 22 operators in this field which includes nearly 400 producing wells. Operators of 90 per cent of the wells will be returning gas to the sand as soon as full-scale operation is reached. Daily average production from the Griffin pool is 9,500 bbl. of oil and 7,000,000 cu. ft. of gas. Continental Oil Co. is the largest producer with 151 wells producing about 5,100 bbl. per day. This company has taken a leading part in developing the repressuring operations.

The repressuring plant operated by Warren Petroleum Corp. contains four 600-hp. angle-type compressors having a total capacity of 9,000,000 cu. ft. per day. Each unit has two 21 by 14-in.

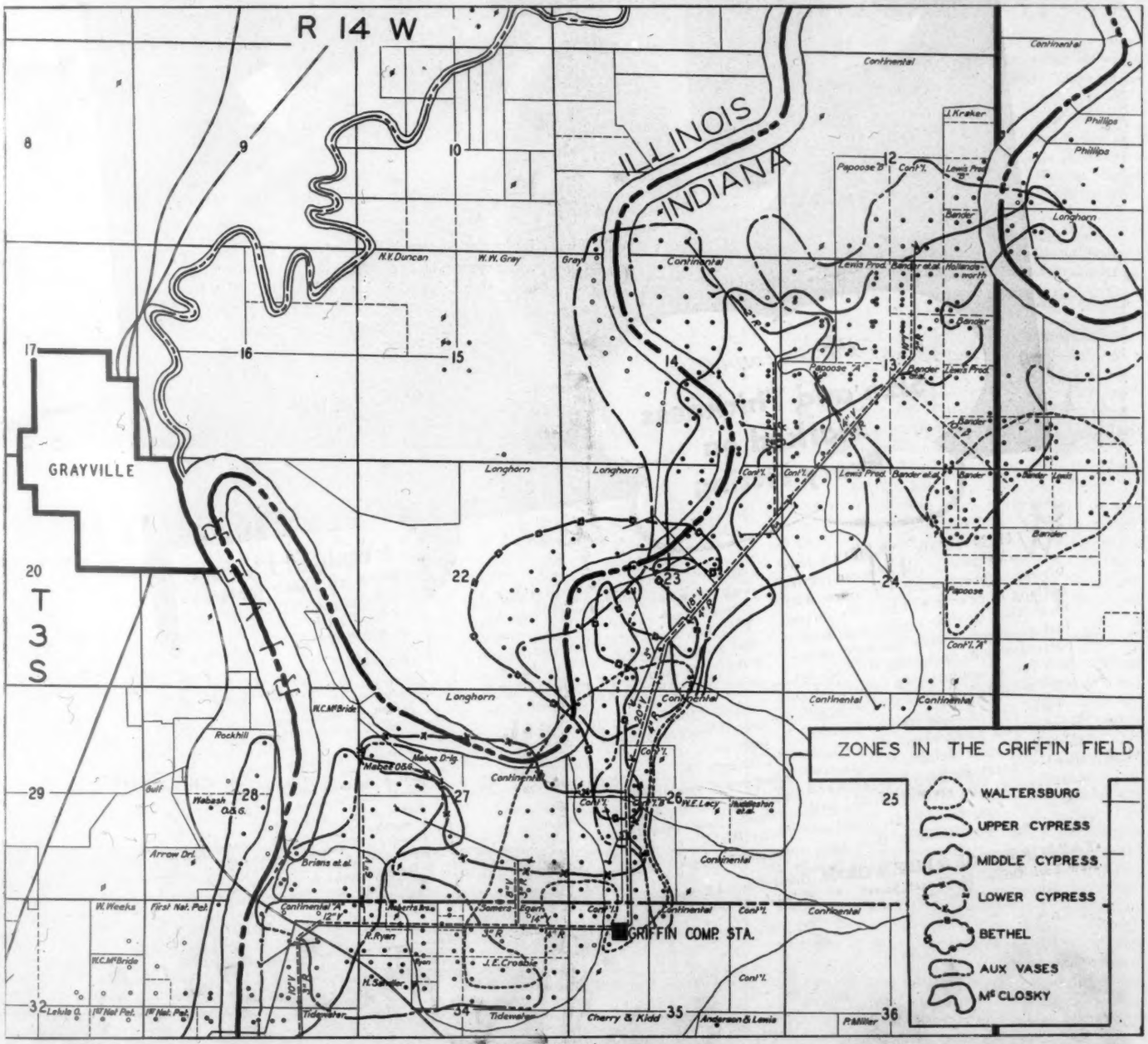


Fig. 1—Map of Griffin field showing average depths to producing horizons and approximate boundaries of more important producing lenses

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WHEN we say "WeldELLS have *Everything*", do we mean they're beyond improvement? Of course not; nothing is, or ever will be. We simply mean that in their design and manufacture every feature has been incorporated which, up to this writing, has been found conducive to better, safer, faster welding and a stronger piping job.

How do you know this to be true? Because you find, when you compare them with other welding fittings, that they have everything *any* fitting has and some features that no other fitting has!

Some of these features are based on engineering considerations that contribute *directly* to the strength of the finished piping installation. Others have convenience and economy in mind. They speed up the work and cut costs. But in the last analysis they, too, contribute to soundness by making it easier for the welder to do the job right.

An example of this is illustrated here. These complete identifying markings on every Taylor Forge Fitting eliminate the guess-work—the searching—the miking—the danger of using wrong thickness. Add this feature to those listed opposite and you'll know why WeldELLS mean better and more economical pipe welding.

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In addition to the feature described, they include:

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▶ **Precision quarter-marked ends**—simplify layout and help insure accuracy.

▶ **Selective reinforcement**—provides uniform strength.

▶ **Wall thickness never less than specification minimum**—assures full strength and long life.

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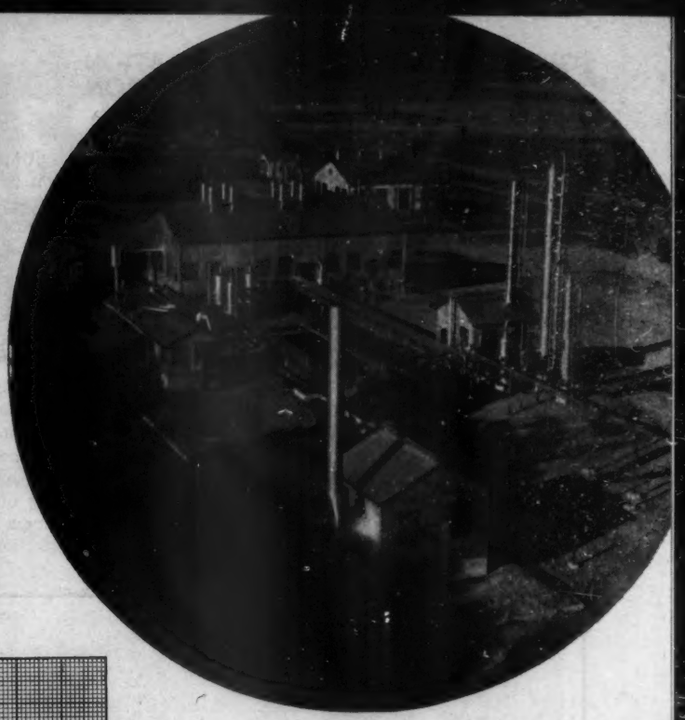
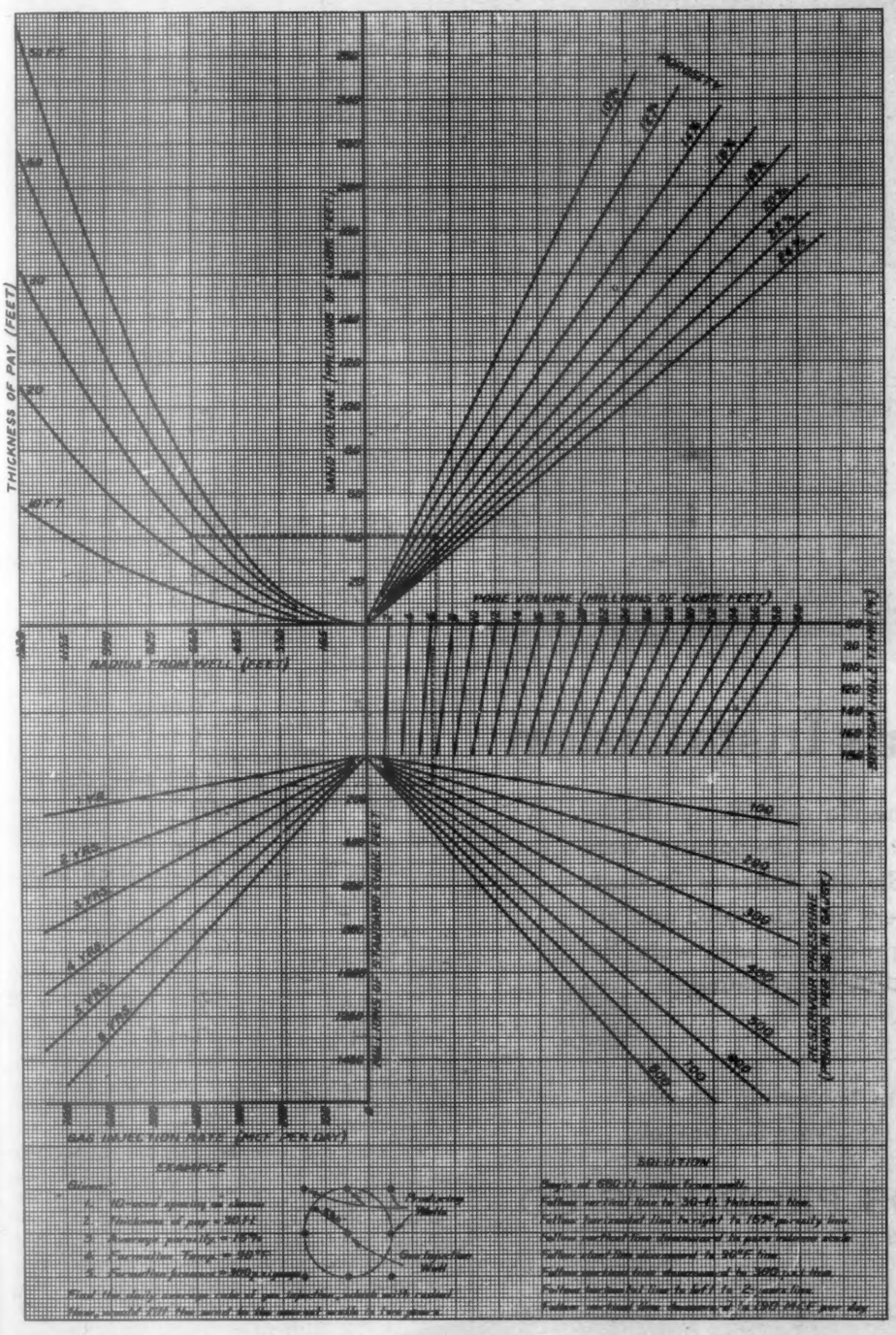
▶ **The most complete line of Welding Fittings and Forged Steel Flanges in the world**—insures complete service and undivided responsibility.





Upper left: Generator (156-kva.) driven by a direct-connected 185-hp. engine. Auxiliary pulley drives exciter on one side and circulating-water pump on the other

Upper right: General view of Griffin plant from a nearby derrick. Electric generating station is in the background with compressor and pump buildings, cooling-water well and towers in center, and boiler house in foreground

Left: Fig. 2—Chart for estimating injection rates required to fill various volumes of sand in desired periods of time

low-stage cylinders, one 15 by 14-in. second-stage cylinder, and one 7¾ by 14-in. third-stage cylinder. Discharge pressure is 750 lb. per sq. in. Cooling water, obtained from wells, is circulated over the gas coolers and is picked up from the pit and recirculated over the engine jacket water coils. It is then overflowed into a nearby slough.

Under an arrangement with Warren Petroleum Corp., a gasoline plant has been constructed for extraction of gasoline from gas produced on Continental leases in the Griffin area. Plant pressuring has been so designed that the residue gas is available after absorption at 750 lb. pressure, which is sufficiently high for return to all producing formations.

One Crew Operates Both Plants

The compression plant is adjacent to Continental Oil Co.'s electric-generating plant and material yard. By arrangement between Continental and Warren, the same crew operates both plants. The generating plant contains three units, each consisting of a 400-hp., 450-r.p.m., six cylinder, four-cycle gas engine directly connected to a 341-kva., 273-kw., 2,400-volt, three-phase, 60-cycle generator with a 7.5-kw. V-belt-driven exciter. The generators are controlled through a cubicle-type switchboard with a panel for each generator and a feeder panel. A fifth panel in matching construction contains control apparatus for plant auxiliaries including jacket-water circulating pumps and engine-cooler fans. Jacket water is cooled in radiator-type coolers located at one side of the plant building. The fans on these coolers are reversible to utilize changing wind directions.

Power is distributed from this plant over three circuits, two at 2,300 volts and one at 4,160 volts. Special provision is made to protect the plant from lightning surges and to automatically kill the line in case of a ground on the primary dis-

tribution system. Distribution transformer stations are of uniform type, each consisting of three single-phase 15-kvs., 2,400-volt to 480-volt transformers. Secondary power is metered at each transformer station. This arrangement is economical because all equipment at one station may be mounted on a single pole, and a minimum stock of replacement parts is required because all stations are alike. Five to ten pumping wells are served from the secondary side of each transformer station.

A total of 160 wells receive power from the central plant. The average power consumption at the plant is 3.3 kw. per well. The use of electric power for pumping is peculiarly advantageous in the Griffin field. Most of the wells are located in areas frequently flooded by the Wabash River. Pumping units are set on substructures which elevate them above the 1913 record flood level. In many instances, this is 20 ft. or more above-ground. Under these conditions the trouble-free operation of the electric motors keeps the wells running even though the pumpers cannot give them regular attention. Reduction of vibration on the substructures has proved to be an advantage. During the past winter, the electrically operated wells "stayed on" through 3 months of floods and severe weather.

Operates Centralized Tank Batteries

Continental also operates centralized tank batteries in the Griffin field. The two largest batteries transfer 2,000 bbl. per day each to the pipe-line company. Each of these handles oil from approximately 50 wells. "Booster batteries" consisting of a separator and flow tank collect the oil from about 10 wells and separate the gas and free water. The oil is then pumped to the central battery for final treating and gaging. This arrangement makes possible efficient gravity conservation. There is a pumper on tour 24 hours a day at the central battery. Very little attention is required at the booster batteries and pumpers working in these areas can attend to more wells.

Having first-class well and lease equipment will place the operators in position to take maximum advantage of production increases made possible by repressuring.

The variety of reservoir conditions encountered in the Griffin field makes it a most interesting repressure project. The production is from sands in seven different geological formations and from the McClosky lime. Most of the zones have several productive lenses and some of the sands may be divided into upper, middle, and lower zones. The field is productive from several zones over

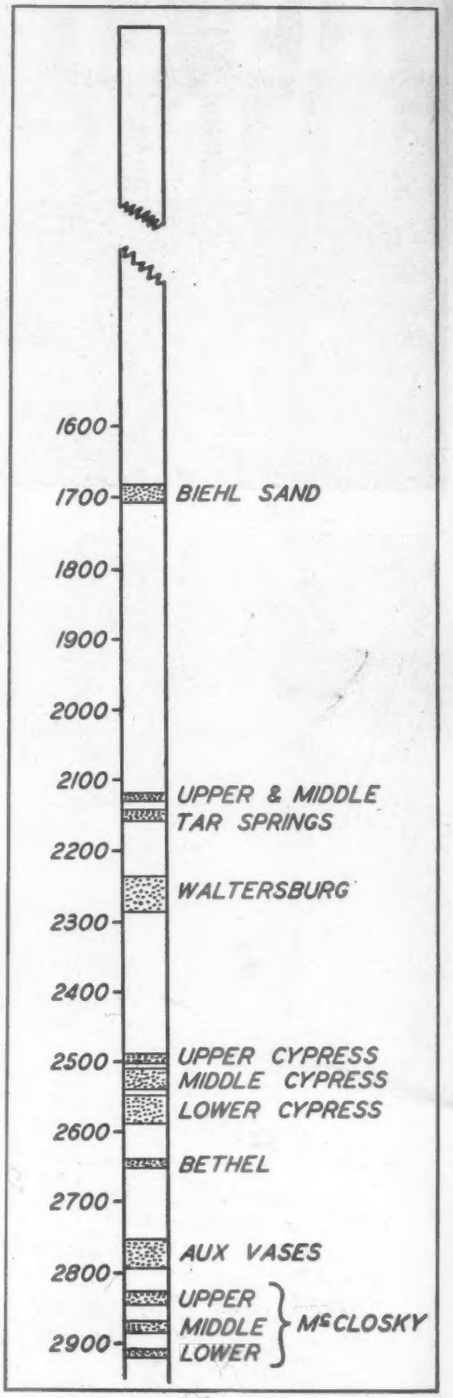
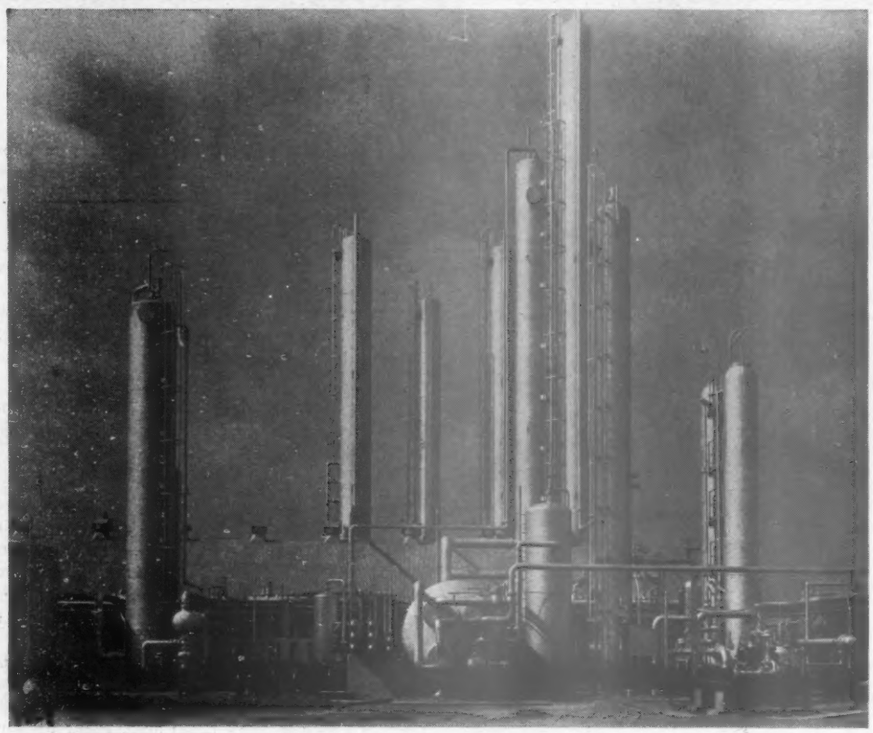


Fig. 3—Main producing horizons of Griffin field, Indiana



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WILL INCREASE TOTAL OIL RECOVERY 50%!

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The plant is part of a larger project for producing essential war materials — the whole under Warren Petroleum Coporation management.

The compressor installation consists of four CLARK 6-Cylinder, 600 H.P. "Super-2-Cycle" Angles, totalling 2,400 H.P. Gas pressures are raised by a 3-stage compression from 10" vacuum to 750 lbs.

A substantial majority of all pressure maintenance installations so far made have been CLARK installations. There are sound engineering reasons for this preference. Consult Clark engineers on your pressure maintenance problems.

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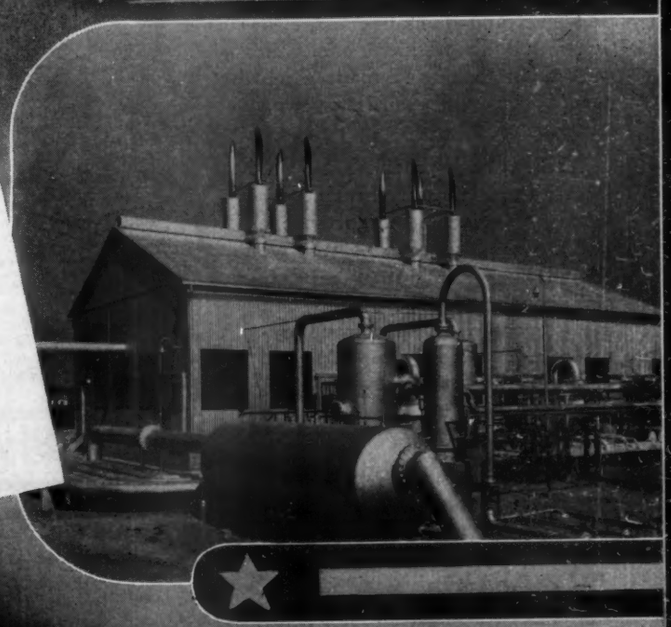


most of its area but no one zone is productive throughout the field. The repressuring problem is complicated by differences in pressure, permeability, and types of natural drive in the different producing lenses.

The wide range of reservoir conditions calls for an individual analysis of the pressure-maintenance problem in each zone. Two general types of recovery operations are feasible. They are a gas-drive type of operation and a recycling type of operation. The terms "gas drive" and "recycling" are used here in their descriptive sense only and not as often used in the literature. In the gas-drive type of operation, an attempt is made to fill the sand surrounding an injection well with gas, forming a gas zone as nearly circular in shape as possible which expands radially from the well. The object is to use the direct pressure of the gas to drive oil ahead of the expanding gas. This is probably the more efficient type of operation and will be attempted first wherever it appears that the permeability is of suitable uniformity and magnitude.

Recycling-Type Operation Expected

In the recycling type of operation, gas is circulated through the formation from the injection wells to the producing wells. As it passes through the partially depleted sand, it drags or washes oil to the producing wells and picks up rich vapors which otherwise would remain dormant in the sand. Under certain reservoir conditions, this type of operation results in excellent recoveries.

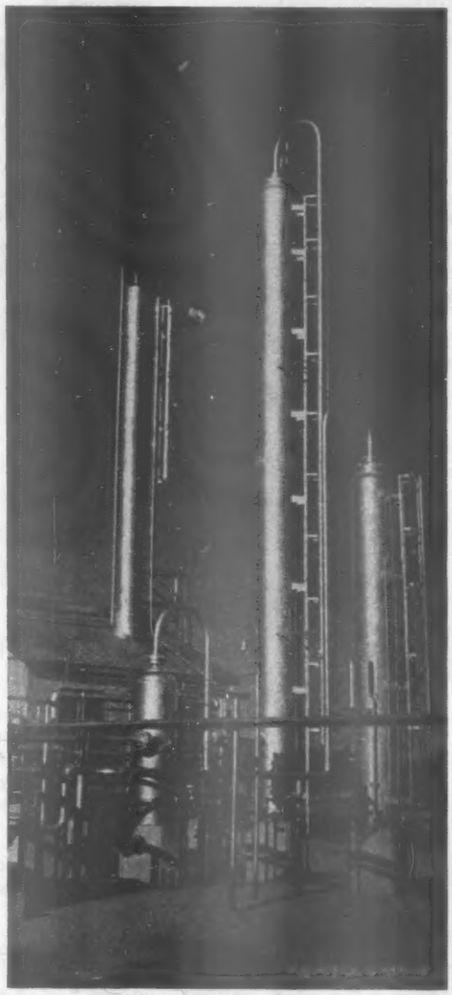
Gas injection in most of the pay zones will be commenced as a gas-drive type of operation but will gradually convert to a recycling type of operation. There are some zones, such as the McClosky lime in Section 33, where reservoir conditions permit only the recycling type of operation.

Fig. 1 is a map of the Griffin field on which the approximate boundaries of the more important producing lenses are shown. Average depths to the various producing horizons are shown in Fig. 3. Some of the prevailing reservoir conditions are described below.

Waltersburg.—Two of the pay lenses in the Waltersburg sand are outlined in Fig. 1. Both of these are low-energy reservoirs having originally contained very little gas and no effective water drive. The Waltersburg productive zone which has its center near the northwest cor. 19-3s-13w has fair permeability and has yielded about 4,000 bbl. per acre to date. This amount represents most of the recovery available by primary methods. It is a low-pressure area.

The Waltersburg producing area centered in the west half of 26-3s-14w is producing in about 20 wells with an average spacing of about one well to 20 acres. The majority of these wells are multiple-zone producers with lower pays also open. The Waltersburg sand in this area is very tight and can be completely developed only after lower pays are exhausted and the majority of the wells in the area plugged back and shot. Meanwhile, any gas which is returned to this pay will be beneficial. It will be open in five injection wells.

Tar Springs.—There are several relatively small producing lenses in the upper Tar Springs. (Omitted from Fig. 1 because of their relatively minor



Absorber, diethylene glycol dehydrator and contactor for dehydrator unit at Griffin plant

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THIS picture shows how from 1/16th to 3/16th of an inch of hard scale was deposited on the inside of the body and cap as well as on the working parts of a No. 212 Armstrong Trap before cleaning was necessary. Note particularly the following:

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3. Scale around bucket vent but the vent was still open.

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ARMSTRONG Traps won't do the impossible, but Armstrong's free-floating level and quick-opening, tight-closing valve action have come through with flying colors on many a job that would have put an ordinary trap out of commission.

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FACING VALVE SEATS—See Fig. 1. Hold face of seat against flat side of grinding wheel or put in surface grinder. Relap after grinding.

LAPPING VALVE PARTS—See Fig. 2. Use breast drill and a fine lapping compound. No pressure—the weight of the drill is enough. Remove all traces of compound when finished.

Fig. 1: You can make several grindings on thickness "A" and still leave enough of the hex head to get a wrench hold.

Fig. 2: Lapping valves with breast drill.

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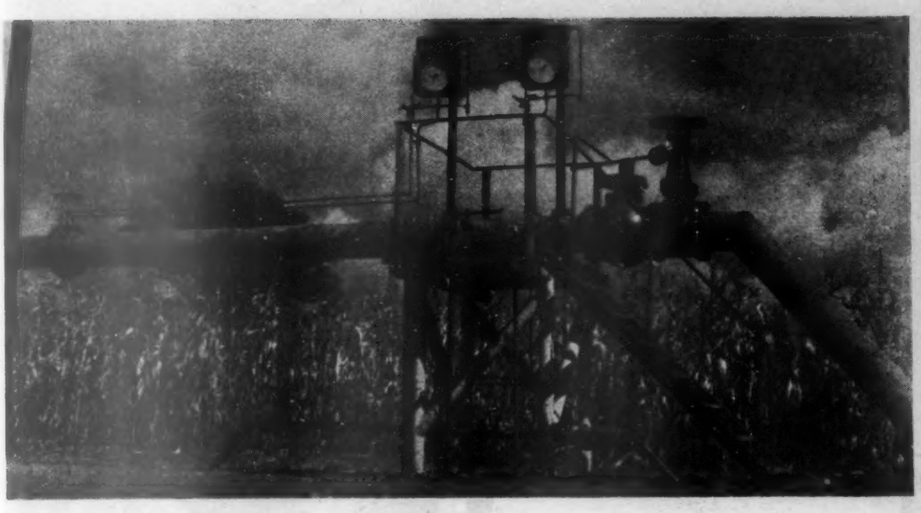
"Service Guide and Wartime Conservation Suggestions for Steam Trap Users". Your copy free on request.



Meter setting on gathering and high-pressure distribution lines is elevated above high-water level of Wabash River overflows. Meter at left is connected by small piping to orifice flange on small line just above the ground

importance.) Much of this production has been temporarily passed up for deeper production and will be developed later by plugging back deeper wells. One or two of the upper Tar Springs producing lenses will be repressured in the initial program and all of them offer some opportunities for increased production by this method.

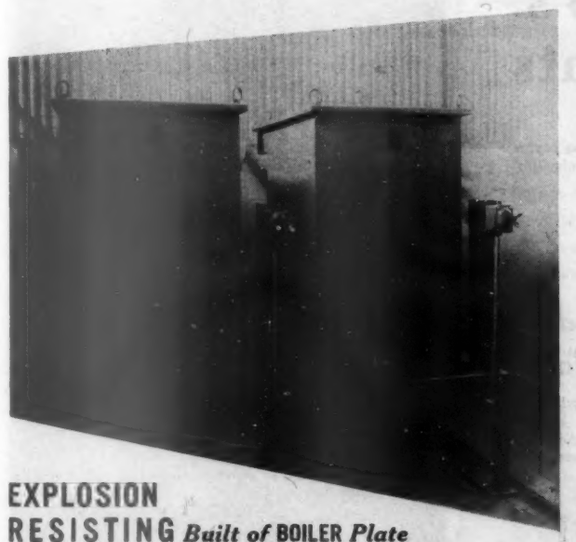
The middle Tar Springs sand is closely associated with the lower Tar Springs sand which carries only water and from which the middle sand derives an active water drive.

Most Pressure Depleted

Cypress sand.—An area of about 700 acres centering in the northeast quarter of 13-3s-14w is productive primarily from the upper Cypress sand. This zone has been highly productive but is now depleted of most of its pressure and its production has now settled to an average of about 30 bbl. per well per day. This sand has fair permeability. The average thickness of the pay is about 20 ft. Slow but good results are expected from an artificial-drive type of repressuring operation. There are also productive lenses in this sand in the southeast part of Section 27 and the east half of Section 33.

The most productive single-pay zone in the field is the middle Cypress zone extending in a roughly north and south direction from the southern part of Section 11 to the northern part of Section 26. This zone has an average thickness of approximately 35 ft. and is highly permeable. The earliest development was near the adjoining corners of Sections 13 and 23. Initial productions of the early wells varied from 300 to over 1,000 bbl. per day. The initial reservoir pressure was about 1,075 lb. per sq. in. The present bottom-hole pressure in the area first developed is less than 100 lb. per sq. in. In the less depleted parts of this zone, the pressures vary from 300 to 400 lb. per sq. in. Excellent results are expected from repressuring the middle Cypress because of its good permeability and because there is a substantial volume of oil remaining in the sand.

A lower Cypress sand lens centered in the southeast quarter of 27-3s-14w has produced substantial quantities of oil. It has an average thickness of about 35 ft. and good permeability. There



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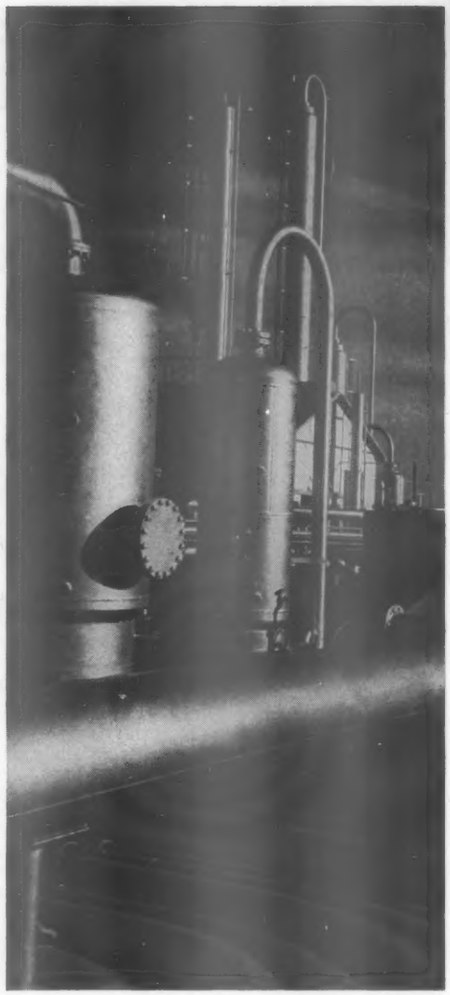
is a substantial volume of oil remaining in this sand which has a reservoir pressure of about 400 lb. per sq. in.

Bethel sand.—The principal area productive from the Bethel lies along the east line of 22-3s-14w. The Bethel sand has a finer grain structure than the shallower sands and is more closely cemented but it has relatively uniform permeability. Its thickness is 15 to 20 ft. This sand has been developed more recently than the others and is less depleted.

Aux Vases sand.—This sand is similar to the Bethel but more variable in permeability and productivity. It has been producing longer and is more depleted. Characteristically, the Aux Vases is a greater gas producer than any of the other sands in the area.

McClosky lime.—Two general areas which are productive from the McClosky lime are outlined on Fig. 1. There are three porous zones in the McClosky but usually only one or two are found productive at a particular location. These breaks vary in thickness from 2 to 10 ft. In some areas, one or more of these breaks has an active water drive but generally the McClosky is a thin but highly porous section with limited reservoir energy. The first well in the northeast quarter of 33-3s-14w flowed 1,000 bbl. per day but has now



Right: Vertical scrubbers on gas-intake lines. Also on the lines is a horizontal scrubber at right (not shown)

Right, below: Elevated support for lines to and from the plants are provided to place lines above high-water level of Wabash River overflows. Included are a 24-in. gathering, a 6-in. 600-lb. pressure return distribution, a 2½-in. lean oil, 2½-in. fat oil, and 2-in. condensate lines

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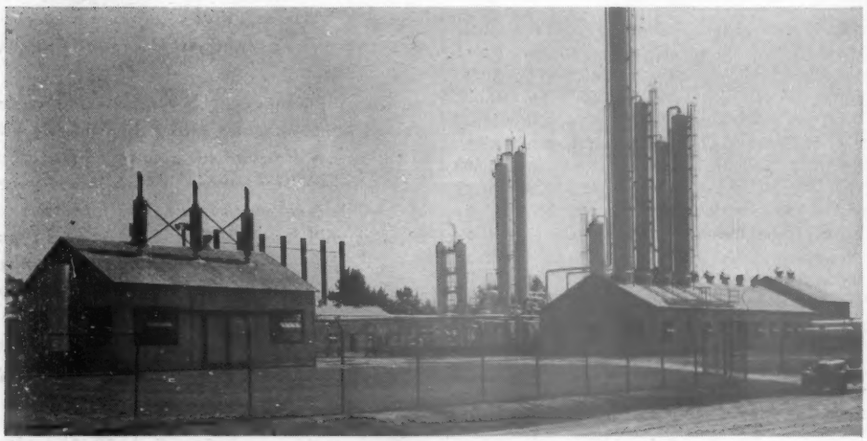

Some of Buildings Furnished by Allied Steel Products Corp. on Warren Petroleum Corp. Crossville, Illinois Natural Gasoline Plant.

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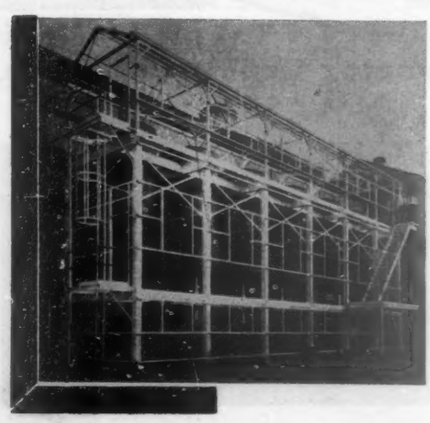

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declined to 30 bbl. of oil and 5 bbl. of water per day. The present reservoir pressure in this area is 15 lb. per sq. in. The rapid depletion of the pressure and production indicates that the reservoir has exhausted its available producing energy and that there is probably a considerable amount of oil remaining inert in permeable channels of the pay. It is planned to inject considerable volumes of gas into this reservoir in an attempt to recover this inert oil by circulating gas through the pay.

Thirty gas-injection wells have been selected by the operators and most of them have now been connected. The wells selected are indicated by circles on Fig. 1. The average density of injection wells will be about one well to 100 acres.

Many of the gas-injection wells will be dual zone wells, some will be triple-zone wells and some combination pumping and injection wells are planned. There are many multiple-zone producing wells in the field.

Close control is at all times required for a proper distribution of gas to the various zones throughout the field.

Optimum Gas-Injection Rates

Optimum rates of gas injection can only be determined after a reasonable period of operation. Injection rates which appear reasonable to the writer may be derived by estimating the rate for a particular well which would fill the sand surrounding it within a radius equal to the distance to the nearest producing wells in a period of 2 years. In the Griffin field, rates determined on this basis will permit return of all available gas through the number of injection wells that have been selected. It is of course improbable that the expanding gas zone surrounding the injection wells will assume even an approximately circular form, but a rough idea of the volumetric quantities involved may be developed on that assumption.

Fig. 2 is a calculation chart for estimating the injection rates required to fill various volumes of sand in desired periods of time. In the example given to demonstrate the use of the chart, it is shown that an injection rate of 190,000 cu. ft. per day would be required to fill a cylindrical sand body 660 ft. in radius and 30 ft. thick, having 16 per cent porosity at 300 lb. per sq. in. formation pressure in 2 years. At the same rate, 8 years would be required to fill a similar sand body 1,320 ft. in radius, the distance to the second row of wells. It should also be noted that the amount of gas required to fill any particular reservoir space is approximately proportional to the pressure. Therefore, higher rates of injection may be used when pumping gas into high-pressure zones.

Most of the injection wells in the Griffin field have been found capable of taking any desired amount of gas per day at pressures only slightly above the formation pressure.

Pressure-maintenance operations in the Griffin field promise to be a valuable conservation measure. They not only provide means of conserving gas for further operations, while recovering petroleum fractions needed in the war effort, but will substantially increase the total ultimate crude-oil recovery.

1st of Tulsa
47 YEARS UNINTERRUPTED SERVICE

THE JOB IS Somewhere in ILLINOIS

BUT THE MONEY CAME FROM—

FIRST NATIONAL

Oil Financing has been a major service of this Bank, from the first discovery of oil in the Mid-Continent in 1901. Active in EVERY branch of the Industry . . . in EVERY Major Oil Development in the Mid-Continent, experience has made FIRST NATIONAL—

The PIONEER in—

Oil Financing!

THE FIRST NATIONAL BANK AND TRUST COMPANY OF TULSA

MEMBER FEDERAL DEPOSIT INSURANCE CORPORATION

Refinery Control System for Reclaiming Used Equipment

IN one refinery it is the company's policy to reclaim as much material as possible. It has therefore been necessary to set up a control system. When a piece of equipment is sold from stores stock a separate card is sent to the office naming the item sold and the amount received. A letter is then sent to the inspectors, the shops, the storekeeper and follow-up man. With this information the items removed from the still are identified and inspected. The order for the work to be done and material is sent to the shop for reconditioning. After inspection approval, the material is credited to the storeroom. This saves material and money on a long line of items. This includes headers, header attachments, valves, fittings, pump parts, bolts, nuts, tubes, engine and compressor parts, instrument and gage parts, etc.

Packing is a definite part of refinery equipment. It should be treated as such. The proper selection, installation and care will insure satisfaction in its use.

For satisfactory service:

Use packing recommended for that particular job.

Be sure that stuffing box is clean and that the rod shaft, liner, piston or sleeve does not show excessive wear when installing new packing.

Compress packing with gland nut, then back off nut until it's only thumb tight. When starting up newly packed pump it is better to have a slight leakage than excessive binding. Excessive binding results in scored shaft and burned packing.

Don't always blame packing. It may be something else.

Use nonmetallic packing wherever possible. Save metallic packing for high-temperature jobs.

Buy packing as often as necessary, but don't buy more than needed. Leftovers may go to waste.

Last but not least—don't throw away that used metallic packing. Place it in proper receptacle for salvage.

REFINERY ACTIVITY AND EXPANSION

Possibility of Delay in Starting Gasoline Rationing Removed From Refinery Schedules

WASHINGTON, D. C.—Nation-wide gasoline rationing will not be deferred in spite of protests from the oil country and elsewhere and will definitely go into effect Nobember 22, it was stated unequivocally last week by Rubber Director William M. Jeffers.

At the same time the Office of Price Administration will start its program of providing tires to keep the nation's automobiles operating for essential purposes. This program has been optimistically interpreted as meaning "tires for all," but actually it is surrounded by reservations and restrictions. The hope and plan is to provide some sort of tires, generally of lower grade, for essential driving, but the gasoline and tire-rationing programs are a'so designed to prevent any except essential driving.

Director Jeffers' declara'ion that gasoline rationing would go into effect as scheduled was made in a letter to the Petroleum Industry War Council in answer to the council's resolution asking for a 90 day postponement, and was repeated at a press conference.

The present plan is to apply throughout the country the gasoline-rationing system now used on the East Coast, with a basic allowance of 16 gal. per month to the ordinary motorist who holds an "A" card. Mr. Jeffers said he does not foresee need for any more drastic reduction in mileage at this time, but he would not promise any more liberal allowances for any area, including oil producing regions, unless and until experience has shown that greater mileage is essential in certain territories.

The 35-mile speed limit will apply, at least initially, to all highway traffic, including scheduled intercity bus and truck operations.

No changes have been made in the synthetic program since Mr. Jeffers took the post of rubber director, but the program as it stood is being pushed vigorously. The increase in authorizations to a total of 1,100,000 tons recommended by the Baruch committee will be made when the present program is somewhat further advanced.

The rubber director has now virtually completed his administrative staff to take over all direction of the activities of the several federal agencies dealing with the rubber problem. This staff will do the planning, make the policy decisions, and supervise operations, but will not duplicate nor take over the detailed work of the existing agencies.

The most recently announced appointment is that of Frank R. Creedon as assistant depu'y administrator in charge of new plant construction. It is understood that in actual practice he will take over most, if not all, of the work of supervising construction work formerly done by the Rubber Reserve Co., although Rubber Reserve will continue to be the contracting agency.

Mr. Creedon is at present chief construction engineer in the Office of Chief Engineers, Corps of Engineers, U. S. Army, in charge of construction of munitions manufacturing plants.

Prior to his work with the Corps of Engineers he was chief engineer of the Public Works Administration with headquarters in New York City in charge of construction of all public works in the 11 northeastern states.

Mr. Creedon was born in Brockton, Mass., and is a graduate of Massachusetts Institute of Technology, 1918.

The Office of Petroleum Coordinator will continue to supervise the conversion of refineries to produce butadiene and other ingredients of synthetic rubber produced by the oil industry and to coordinate this with the production of aviation gasoline and other petroleum war products.

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Four Technical Papers on W.P.R.A. Shreveport Program

Last of the 1942 regional technical meetings of the Western Petroleum Refiners Association will start at 9:30 a.m., October 30, at the Washington-Youree Hotel, Shreveport, La.

The four technical papers to be presented at this meeting will have as their principal theme a discussion of refinery problems related to the war.

First on the program will be a paper entitled "Metallizing in the Refinery," by J. E. Young, Sr., of General Metallizing & Machine Co., Houston, Tex. Mr. Young's paper, among other things, will deal with the methods of preparation, fuels, spraying technique, metals recommended for various applications, machining and grinding, and safety precautions.

"Tractors and Farm Machinery—the Machine Tools of Agriculture," by C. G. Krieger, of the Ethyl Corp., Detroit, Mich. The general subject of fuels and lubricants ties in very closely with any discussion of wartime farm machinery, and Mr. Krieger's paper will include latest data on these.

Following a luncheon recess, the third paper will be presented, entitled "Mercaptans," by F. C. Moriarty, of Universal Oil Products Co., Chicago. This paper will review the various properties and reactions of mercaptans, with particular reference to refining problems, and will also include a description of simple caustic washing for mercaptan removal and a description of the caustic methanol mercaptan-removal process. The various sulfur compounds in gasolines will be classified, and the relative importance of mercaptans in comparison with these compounds pointed out. The effect which mercaptans have upon the properties of finished gasolines, and the methods of mercaptan disposal and the effect improper disposal can have, will also be discussed. Information as to what is expedient during the war period will be included.

A paper on "Synthetic Rubber," by a representative of the Houdry Process Corp. will conclude the program.

Barber Asphalt Co. Votes To Build Ships During War

NEW YORK.—The Barber Asphalt Co., of which T. Rieber is now president, has voted to go into the building of ships for the duration of the war. At the same time the company disposed of a number of i's plants which have been losing money though the refinery in New Jersey which operated at a profit only in 1939 was retained.

Among the properties sold were 206 tank cars to the General Transportation Corp. while at the same time stockholders voted unanimously to purchase a tanker from the Maritime Commission. The refinery has been shut down since early this year because of inability to obtain crude. In commenting on other operations Mr. Rieber, who was formerly chairman of the Texas Co., told stockholders that those in Trinidad had been uniformly profitable and that royal'ies from its Venezuelan concessions had been satisfactory.

Sketches of Plant Operators . . .

O. W. SCHLUP, construction superintendent for Foster Wheeler Corp., New York, completing his twenty-first year of intima'e contact with the building and operation of refineries, is on the firing line in the present expansion program of manufacturing facilities. He is now completing a $7,000,000 catalytic cracking unit at one of the eastern refineries and already has his next assignment at Houston, Tex., awaiting attention.

Mr. Schlup, born at Russellville, Mo., in 1902, started refinery-construction work as a rigger for Universal Oil Products Co. on a cracking unit at the Victory Oil Co. refinery at Potwin, Kans., in 1921. He continued with Universal for 7 years and then worked for a number of refinery engineering organizations. He has been construction superintendent for Foster Wheeler for the past 7 years.

Since 1921 Mr. Schlup has worked in approximately 80 different refineries in North and South America. Doubtless he could, time permitting, write a volume on "Build Refineries and See the World."

The numerous moves caused by the scope and nature of Mr. Schlup's vocation have given his two daughters, Betty, 16, and Mary Helen, 14, a chance to study a cross-section of educational institutions. Rather than complain, however, they have enjoyed the variety of having never lived longer than a year in one place. At one stop in the Schlup family's travels the children attended school where Dutch was spoken exclusively.

Pipe-Line Activity

Oil Will Flow Through W.E.P. 24-In. Line About January 15

Recent progress made in the laying of 24-in. pipe for the War Emergency Pipelines, Inc., project confirms the confidence expressed by Petroleum Coordinator Harold L. Ickes in a statement that the first oil will flow through the Texas-Illinois pipe line about January 15.

At the beginning of this week 341 miles had been laid of which 320 miles had been backfilled. By the end of this week it is anticipated that 375 miles will have been laid and 350 miles will have been backfilled. About 500 miles of pipe has been delivered. All of the 550 miles of pipe for the project will probably be shipped by November 7.

Work has started on the site of the pump station at Longview, Tex. Agreements have been made for the pump-station contracts and details are being completed this week. Construction of the stations is to be divided among three contractors. Williams Brothers Corp. will build five stations at the southern end of the line including the Longview, Tex., terminal. Midwestern Engineering & Construction Co. will build four stations on the central section of the line. Sheehan Pipe Line Construction Co. will build three stations at the northern end. The standard type of station will have three 1,500-hp. electric-centrifugal units with a total of 4,500 hp. At one point a special set of conditions is met by a two-unit station. Arrangements have been completed for the purchase of sites of all stations except two. Initial material for some of the stations is now on the ground.

All of the river crossings have been completed except for a small amount of grading and dredging which is being done by Williams Brothers Corp. which contracted all construction of this type.

In order to beat the rains which are a potential threat of trouble due to high water in bottom lands, a special arrangement was made for expediting construction in the area at the Little Missouri River in southeastern Arkansas. According to this, the ends of sections originally contracted by O. E. Dempsey Construction Co. and Anderson Brothers have been clipped to form a new section where work is being done by a spread of Oklahoma Contracting Co., which has been moved from the northern part of Arkansas; this spread is working north from the Little Missouri River to the Ouachita River.

Orders for thirty-nine 80,000-bbl. second-hand steel storage tanks also have been placed with Humble Pipe Line Co., Gulf Oil Corp., Tide Water Associated Oil Co., and Sinclair Prairie Marketing Co. Bids for cutting down these tanks and re-erecting them have been called for and it is expected that this work can be carried on without delay.

Construction of power lines also is to be started in the near future.

Sinclair Completes Deal For Continental Lines

Completion of a deal whereby Continental Pipe Line Co. sold its pipe-line system in the Corpus Christi, Tex., area to the Sinclair Refining Co. has been announced at Continental offices at Ponca City, Okla.

Sinclair acquired the Continental crude-oil gathering system of about 300 miles of 4, 5, 5½, 6, and 8-in. lines which connect 22 pools in the area and 750,000 bbl. of crude oil in the line. Continental's deep-water terminal at Corpus Christi also was included. Sinclair will take over operation on November 1.

Panhandle Eastern's Michigan Gas Line Is Half Finished

Less than half of the 85-mile 12-in. natural-gas line of Panhandle Eastern Pipe Line Co., between Manchester and Kalamazoo, Mich., remains to be completed. Work started the first week in September and will be finished by December 1. Operations of the contractor, Midwestern Engineering & Construction Co., are being supervised by R. C. Stanley, superintendent. Field headquarters will be moved from Jackson to Battle Creek, Mich., next week. Pipe has been laid during the past week at the rate of 7,000 to 10,000 ft. per day.

Texas Co. Buys System In Kevin-Sunburst Area

Texas Co. has purchased the Illinois Pipe Line Co. transportation system in the Kevin-Sunburst field in Montana, consisting of 50 miles of 6-in. and 9 miles of 8-in. line with gathering laterals to all parts of the field. Transfer was made October 16.

Industrial Natural Gas Lays Salem-Mount Vernon, Ill., Line

For supplying fuel to Mount Vernon Car Co., manufacturer of railway equipment, Industrial Natural Gas Co. of Charleston, W. Va., is laying a line consisting of 4-in. and 6-in. pipe for transmitting residue gas from the Sunflower natural-gasoline plant near Salem to Mount Vernon, Ill.

Construction of Tiffin-Akron Line Has Been Arranged

Contracts for laying of the gasoline line from Tiffin to Akron, Ohio, have been let to H. L. Gentry Engineering Co. for the eastern end of the line where 42 miles of 8-in. and 26 miles of 6-in. will be laid. Welding of this section of the line has been contracted by Midwestern Engineering & Construction Co. The remainder of the line has been contracted by Exter Construction Co.

This project of Ohio Emergency Pipe Line, Inc., entailing the laying of a total of 82 miles of 8-in. will deliver refined products from Shell and Standard of Ohio systems to the Sun-Susquehanna line for delivery eastward.

Phillips Operates New Hobbs-Borger Line

Phillips Petroleum Co. has put in operation its new natural-gasoline line from the West Texas-New Mexico area to its refinery at Borger, in the Texas Panhandle. The line will gather products from company and affiliated plants in the southern area. Main line is 240 miles of 8-in., extending from Borger to near Hobbs, N. M., with 60 miles of 6-in. line extending into Gaines and Ector counties, Texas.

Work was contracted by O. E. Dempsey Con-

LATEX CONSTRUCTION COMPANY

Will be Inactive for the Duration

Effective immediately and for the duration of the war, Latex Construction Company will be dormant.

Equipment and personnel of this company will be employed by J. W. Sharman and Earl Allen who have formed a partnership to carry on pipe line construction work.

SHARMAN AND ALLEN

Pipe Line Contractors

OIL & GAS BLDG. • HOUSTON, TEXAS

A DECADE of PROVEN SERVICE . .

Designed for the economical handling of your pipe protection problems.

AVAILABLE SERVICES . .

Mill Coating and wrapping. Traveling Type coating and wrapping over the ditch. Yard or railhead coating and wrapping.

PIPE LINE SERVICE CORPORATION

FRANKLIN PARK, ILLINOIS

Longview, Texas Glenwillard, Pa. Chicago New York

struction Co. which is also laying 15 miles in two loops near Spearman, Tex. This firm is also engaged in laying 22 miles of 8-in. near Harrisonville, Mo., where a field office is located for completing an extensive looping program carried on throughout the 1942 construction season.

Pipe for Louisiana Project Comes From Del Rio Line

HOUSTON, Tex.—Work is under way on the 10 and 8-in. line of the Texas Pipe Line Co. from the Paradis field, St. Charles Parish, Louisiana, to the Texas Co. refinery at Port Neches, Tex., a distance of 227 miles. The line is being laid by Sharman & Allen, who recently succeeded Latex Construction Co. Pipe for the line consists of 8-in. line salvaged from the Texas Pipe Line Co. from several points in East Texas and northern Louisiana, while the 10-in. is a part of the Illinois Pipe Line system from Iraan to Lytle, Tex. Sharman & Allen are lifting that part of the line extending from Del Rio to Lytle, a distance of 125 miles. The 10-in., which was a screw-joint line, will be reconditioned, the collars will be removed and it will be relaid by the newly developed Forbes pressure-welding method. The line will be double coated and wrapped. Gangs are in the field at Del Rio and Port Neches, and at Franklin, La.

The remaining section of the Illinois line extending from Del Rio to Iraan is being lifted by Williams Brothers Corp. and will be used for the extension of the Plantation pipe line from Greenville, N. C., to Richmond, Va.

Removal of the Illinois pipe line from Iraan reduces the number of outlets from the Yates field to three. It also marks the departure of the Illinois Pipe Line Co. from Texas as this was its only remaining line. The company is a subsidiary of the Ohio Oil Co. and the line was laid to transport the Mid-Kansas Oil & Gas Co. (now Ohio) and Transcontinental Oil Co.'s oil from Yates. Later Ohio Oil Co. acquired the Transcontinental Oil Co. Last year, the line carried approximately 6,000,000 bbl. that being the output of the Yates field. This was transferred to lines of the Humble Pipe Line Co. at Lytle.

Pipe-Line Personalities . . . . . Joseph Bowes

JOSEPH BOWES, president of Oklahoma Natural Gas Co., which operates an extensive natural-gas pipe-line system, has been in the public-utility business since 1909 and an executive since 1916. He has headed or held responsible positions with electric, gas, transportation, and water service organizations from Tacoma, Wash., to Port Arthur, Tex., and from Virginia to Nebraska.

He was born in Washington, D. C., in 1885 and received his early education in the public schools of Baltimore, Md. In 1905 he entered the engineering college at Cornell University, from which he graduated in 1907 with a degree in mechanical engineering, specializing in electricity.

Mr. Bowes' first job was doing electrical work with the Baltimore & Ohio Railroad, and then for a time he was employed by Postal Telegraph Co. as a specialist on automatic telegraphic machines.

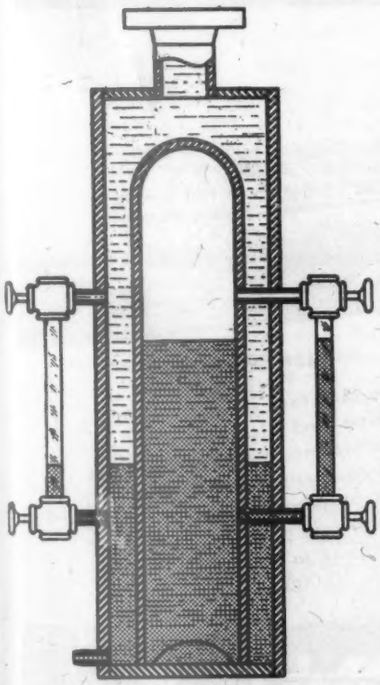
He began his career in the field of public utilities in 1909 when he moved to Tacoma, Wash., to accept employment with the Tacoma Railway & Power Co., a position which was to keep him on the West Coast for 7 years. In succession, he operated utilities in Port Arthur and Beaumont, Tex., and Lake Charles, La. While in Lake Charles with the Gulf States Utilities Co. he built the first electric-transmission line to extend across Louisiana, from Texas to Baton Rouge. Mr. Bowes moved back to Texas as manager of El Paso Electric Co. From there, in 1928, he went to Richmond, Va., as operating vice president of Virginia Electric & Power Co., and in 1934 to Scottsbluff, Neb., as operating vice president of Western Public Service Co., which had properties in Nebraska, Wyoming, Colorado, South Dakota, Kansas, Missouri, and Iowa.

In June of 1936 Mr. Bowes came to Tulsa to direct the affairs of Oklahoma Natural Gas Co.'s state-wide system, and has been president and director of the company ever since.

Socony-Vacuum Lays Outlet For St. Jacobs, Ill., Pool

To provide an outlet for the St. Jacob pool in Madison County, Illinois, Socony-Vacuum Oil Co. Inc., is laying a 4-in. line north to connect with the company's 10-in. trunk line from East St. Louis, Ill., to Lima, Ohio.

WHEATLEY LIQUID SEAL EQUALIZER



Patent Applied For

ABSORBS SHOCK ON RECIPROCATING PUMPS

Equalizes Pressure on Lines, Valves and Cylinders

The Wheatley Liquid Seal Equalizer incorporates the best features of the conventional air chamber but eliminates the objectional characteristics. The air or gas cannot escape into the line. This is accomplished by the fact that the sealing liquid is inert to absorption of air or gas from the compression chamber. The liquid is also insoluble in and of higher specific gravity than the liquid being pumped. These features minimize the tendencies toward corrosion and gum forming in the lines and totally eliminate the danger of explosion when air is used in the compression chamber.

- Simple in Principle
- Compact in Design
- Easily Installed
- Rust and Corrosion Proof
- Relieves Shock on Other Equipment
- No Moving Parts • Nothing Wears—Nothing Tears • Nothing to be Replaced • Available for suction and discharge side
- Made in any Size
- Available for Immediate Shipment

The Wheatley Liquid Seal Equalizer may be used at all prevalent operating pressures of the petroleum pipe line industry.

A thorough trial by a major pipe line has demonstrated the outstanding features and efficiency of the Wheatley Equalizer under actual operating conditions. Location of Equalizers now in use will be forwarded upon request. Write for Bulletin No. PL-525.

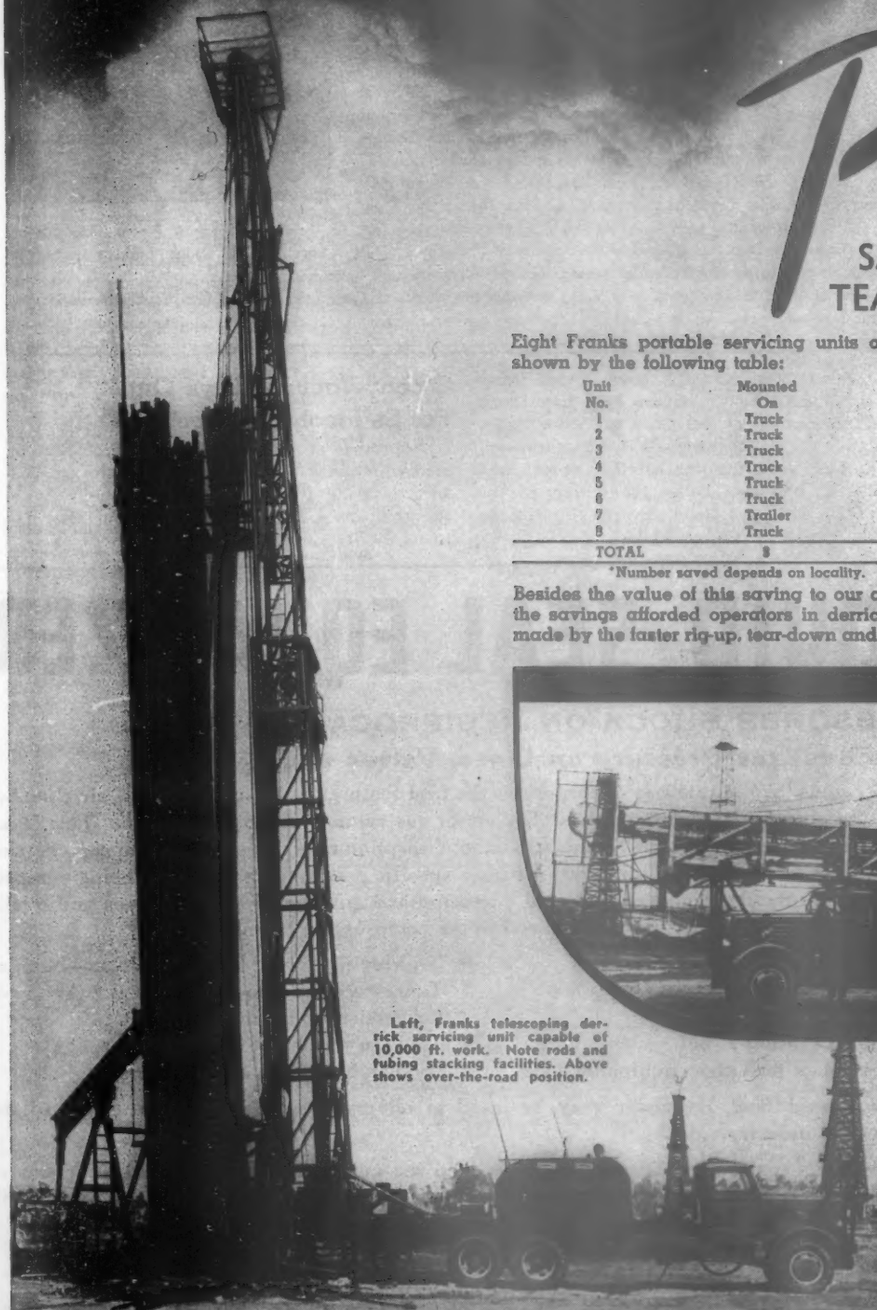
OTHER WHEATLEY PIPE LINE SPECIALTIES

- PUMPS
- CHECK VALVES
- GATE VALVES
- PLUG VALVES
- STRAINERS
- STEEL HALF SOLES
- COLLAR WRAPS
- WELDING SLEEVES
- ORIFICE FLANGES
- HOISTING TRIPODS
- STERLING CENTRIFUGAL PUMPS

WHEATLEY BROS. PUMP & VALVE MFRS.

TULSA, OKLAHOMA

4,068 TONS OF ~~DERRICKS~~ *Steel* SAVED BY 8 FRANKS MFG. CORP. WELL SERVICING AND DRILLING UNITS UNITS



Plus

SAVINGS IN RIG-UP, TEAR-DOWN & MOVING

Eight Franks portable servicing units are eliminating 4,068 tons of steel as shown by the following table:

Unit No.	Mounted On	Derricks Each Unit Eliminates*	Tons of Steel Saved
1	Truck	60	540
2	Truck	45	405
3	Truck	75	675
4	Truck	72	648
5	Truck	49	441
6	Truck	51	459
7	Trailer	48	432
8	Truck	52	468
TOTAL	8	452	4068

*Number saved depends on locality.

Besides the value of this saving to our all-out war effort, it can easily be seen the savings afforded operators in derrick cost alone. Additional savings are made by the faster rig-up, tear-down and moving facilities built into Franks units.

Left, Franks telescoping derrick servicing unit capable of 10,000 ft. work. Note rods and tubing stacking facilities. Above shows over-the-road position.

MAIN FEATURES

Can be used for "slim-hole" drilling, deepening and cleanout work with rotary attachment; 100 percent portable; derrick raised and lowered in 7 minutes by power screw device; requires only four guys; lines and block remain strung in moving; models for shallow to 10,000 ft. wells.

For Further Details See Franks Representatives

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Oklahoma, Kansas, Rocky Mountains: W. R. Brown, Box 137, Whittier Sta., Tulsa, Okla.
Illinois Basin and Michigan: Glen L. Wigton, Box 26, Vincennes, Ind.
California: Hillman-Kelley, Inc., 2441 Hunter Street, Los Angeles, Calif.

FRANKS MFG. CORP.
WELL SERVICING AND DRILLING UNITS
TULSA, OKLAHOMA

FIELD DEVELOPMENTS...

HIGHLIGHTS FROM THE WEEK'S NEWS—

The measure introduced by Senator O'Mahoney to encourage wildcatting may succeed, if passed, in doing so but it appears to be somewhat inadequate for the purpose. The bill provides that royalties to be paid on oil and gas from fields not within any known geological structure will be limited to 12½ per cent for the first 10 years of the lease. At present, royalties on public lands begin at 12½ per cent and increase as daily production increases. This reduction in the royalty on flush production is of advantage to the producer and, despite the opinion of a prominent geologist on the staff of the U. S. Geological Survey, as expressed at a hearing before the Senate public lands committee, may easily mark the difference between loss on a producer and a profit. Many wells have rapid decline curves and if a royalty of 20 per cent is paid on 50 to 60 per cent of the total recovery, the operator may find himself in the red.

There is nothing inherent in the figure 12½ which makes any other percentage of the production too high or too low, but experience has shown that by and large this royalty affords the greatest degree of fairness to both producer and landowner.

The sliding scale of royalty payments has done more to retard prospecting on public lands than any other single factor and it seems that the public lands committee has acknowledged this. Exemption from the sliding scale of wells now producing or of wells that may hereafter be drilled in known fields would also appear just. As it is difficult to foresee a time when the nation will not need active exploration, the 10-year provision might be dropped also. In other words, the Government should be satisfied with the regular commercial lease if it wishes to carry on normal development.

These points, however, are subject to considerable argument. The term "known geological structure" provides the greatest interest. The Sweetgrass arch in Montana is a known geological structure. Presumably the arch extends to the trough of the surrounding synclines so that any field found on this known structure is not exempt from the sliding scale. That includes about all of the really favorable territory in Montana. The Las Animas arch and the Texas-New Mexico Permian basin are also known geological structures.

Probably this phrase will be subject to interpretation by some agency such as the Bureau of Mines or the Geological Survey.

Finally, what will happen in case a new field, believed to be on an entirely unknown structure, is found to merge with another field and that the supposedly different structures become one and the same? Would the operators in the later field be subject to the sliding scale when the facts became known or would it be applied retroactively?

The possibilities for litigation afforded by this term will be almost as great as were contained in the apex law of metal mining.

WYOMING: A new Lakota sand pool has been opened on the Horse Creek structure in Laramie County. The discovery well encountered 58 ft. of saturated sand and flowed at the rate of 27 bbl. in 30 minutes on a drill-stem test. Continental Oil Co. has finished its development program in the Circle Ridge field, Fremont County (p. 90).

SOUTHWEST TEXAS: A prospective discovery in the Berclair area of Bee County is shut down on orders after making 7 bbl. of distillate in 12 hours on choke. The deepest test ever drilled in Hidalgo County has been abandoned. It was located between the San Salvador and La Reforma distillate fields (p. 90).

LOUISIANA GULF COAST: A Vermilion Parish wildcat in the Cos Island area is preparing to test shows encountered in four sands. An Acadia Parish wildcat which caught fire several weeks ago still defies all attempts to extinguish the blaze (p. 92).

TEXAS GULF COAST: Wildcats in Austin and Chambers counties appear to have opened new fields. The Chambers County test is flowing 720 bbl. of fluid daily on choke while the Austin County test swabbed only 1 bbl. of fluid an hour. A wildcat in Walker County has recovered 7 ft. of oil-bearing Woodbine sand (p. 92).

NORTH LOUISIANA: A new gas-distillate field has been opened in Winn Parish and a new Wilcox field has been added to the large list of new fields in La Salle Parish. A wildcat in Catahoula Parish is preparing to test an oil sand encountered in the Wilcox (p. 98).

PERMIAN BASIN: A new pay zone in the upper Permian lime is in prospect 4 miles southwest of the Wasson field in Gaines County. Location has been staked for a deep Ordovician test in southeastern Sterling County (p. 86).

OKLAHOMA: A wildcat 1 mile north of the discovery well of the Liberty pool, Noble County, flowed 450 bbl. of oil on a 6-hour test of the Wilcox and has apparently extended the pool (p. 95).

EAST TEXAS: Material is being moved in for a new deep test on the Yantis prospect, northwestern Wood County, and a test just north of the Concord field discovery well has been abandoned. A wildcat 2 miles northeast of Helbyville is reported flowing oil, gas and salt water (p. 84).

NORTH CENTRAL TEXAS: A new Bend conglomerate field is assured in southwestern Montague County where a wildcat is swabbing and flowing oil and gas (p. 87).

CALIFORNIA: An intensive development program is under way in the Midway-Sunset field after an extended period of inactivity, and activity in the Montebello field is also increasing (p. 84).

COMPLETIONS IN ALL FIELDS . . .

(Week Ended October 24, 1942)

	Oil	Gas	Dry	Total	Footage	Ttl. comp. to date 1942	1941
N. Y., Pa., and W. Va.	43	16	8	67	141,170	2,883	4,865
Ohio	2	9	11	21	60,127	943	1,256
Indiana	5	2	6	13	18,719	301	417
Kentucky	0	1	0	1	3,100	219	551
Illinois	26	0	14	40	104,095	1,499	2,999
Michigan	3	2	5	10	31,422	591	740
Kansas	16	2	12	30	93,066	1,317	1,795
Nebraska	0	0	1	1	2,491	31	73
Missouri, Iowa	0	0	1	1	562	13	32
Oklahoma	4	0	11	15	49,055	985	1,565
Texas:							
North Central Texas	6	0	8	14	41,722	942	2,341
West Texas	14	0	3	17	70,340	1,138	1,863
Texas Panhandle	3	0	0	3	9,538	307	548
Eastern Texas	4	0	0	4	17,322	335	881
Texas Gulf Coast	5	3	7	15	99,195	592	893
Southwest Texas	6	0	4	10	36,992	884	1,531
Total Texas	38	3	22	63	275,109	4,198	8,057
North Louisiana	3	0	1	4	18,470	401	630
Louisiana Gulf Coast	2	0	2	4	43,407	417	712
Total Louisiana	5	0	3	8	61,877	818	1,342
Arkansas	1	0	2	3	18,399	144	162
Mississippi and Southeast	0	0	2	2	12,172	63	227
Montana	1	7	1	9	10,604	173	242
Wyoming	3	0	1	4	10,782	94	152
Colorado, Utah	1	0	0	1	1,223	20	27
New Mexico	5	0	1	6	22,418	222	229
California	14	0	6	20	77,853	616	918
Total United States	167	41	107	315	997,244	15,130	25,649
Total previous week	211	39	101	351			
Week ended Oct. 25, 1941	382	42	156	580			

CALIFORNIA FIELD REPORT

Extensive Development Program Under Way at Midway-Sunset

By L. P. STOCKMAN

LOS ANGELES, Calif. — The Midway-Sunset field, one of the state's first major districts, has really come back with a bang after an extended period of inactivity resulting from the development of other more prolific areas. At the present time there are 12 wells being drilled and locations staked or mapped for 33 more. In addition to this imposing list, Standard Oil Co. has indicated its intention of reequipping 46 wells that have been standing suspended for several years during the period of high production. Most of these wells now being drilled and rejuvenated will only result in small production individually but every barrel will help especially when they will produce a heavy crude oil that is in good demand to meet the fuel-oil shortage. Current drilling operations would probably be substantially larger if there were enough drilling crews and material available. Standard Oil Co. is also embarking on an aggressive development program in the Kern River field of Kern County where the company is drilling 3 new wells and has 14 additional locations staked. Most of Standard's work is located on the Kern Front. In the old field, Tide Water Associated Oil Co. is drilling one new well and has locations made for three additional holes. New drilling at South Belridge in Kern County is being done for the most part by Belridge Oil Co., General Petroleum Corp., Ohio Oil Co., Union Oil Co., and E. A. Parkford. At East and West Coalinga, Standard Oil Co. is expanding its drilling program although it is not expected that any considerable gain will be reflected in drilling lists. Many of these wells are drilled within a week or 10 days and consequently drilling reports do not have time to record the consistent gain in work. With few exceptions this shallow drilling, which ranges from 600 ft. to 1,800 ft., depending upon the field being developed, is being done with portable equipment and consequently there remain no derricks standing upon completion of work. In some fields, masts are erected but for the most part the wells skeletonized.

SAN JOAQUIN VALLEY COMPLETIONS

Belridge wildcat district, Kern County: Section 27 Oil Co. 1 Aslin, 27-28s-22e, dry, T.D. 1,367 ft., no important showings of oil or gas logged.

Chowchilla wildcat district, Madera County: Texas Co. 27-26 Chowchilla, 26-11s-14e, dry, T.D. 8,245 ft., no important oil or gas showings logged from top to bottom.

Coalinga, East, Fresno County: Shell Oil Co., Inc., 71-32 fee, 32-19s-15e, pumped 281 bbl., 21.2-gravity, 1.2 per cent cut, T.D. 2,870 ft., perf. 2,730-2,8 ft., 2,820-70 ft., completed in upper Coalinga zone of Pliocene age.

Standard Oil Co. 101-35-A fee, 35-19s-15e, flowed 144 bbl., 19.8-gravity, 0.3 per cent cut, 105,000 cu. ft. gas, 32/64-in. bean, pressures 140/355 lb., T.D. 3,090 ft., perf. 2,743-6,066 ft., completed in East Coalinga zone of Pliocene age.

Standard Oil Co. 9 Sonntag, 36-19s-15e, pumped 1[illegible] bbl., 30.9-gravity, 5 per cent cut, T.D. 4,032 ft., P.B. 4,010 ft., perf. 3,787-3,895 ft., 3,938-4,010 ft., completed in East Coalinga zone of Pliocene age.

Hanford wildcat district, Kings County: Continental Oil Co. 1 Drummond, 36-18s-22e, dry, T.D. 7,897 ft., top granite 7,788 ft.

McKittrick, Kern County: Tide Water Associated Oil Co. 65 Del Monte, 13-30s-21e, pumped 63 bbl 13.1-gravity, 0.7 per cent, T.D. 1,125 ft., perf. 594-971 ft., completed in McKittrick zone of Pliocene age.

Midway-Sunset, Kern County: Chanslor-Canfield Midway Oil Co. 30-26 fee, 26-31s-22e, pumped 191 bbl., 17.9-gravity, 7 per cent cut, T.D. 2,077 ft., perf. 1,906-2,076 ft., completed in upper Midway zone of Pliocene age.

Chanslor-Canfield Midway Oil Co. 42-22 fee, 2-32s-22e, pumped 6 bbl., 11.9-gravity, 35 per cent cut, T.D. 1,813 ft., perf. 1,468-1,729 ft., completed in upper zone of Pliocene age.

Standard Oil Co. 103-15-D fee, 15-32s-24e, pumped 49 bbl., 26.9-gravity, 1 per cent cut, T.D. 2,884 ft., perf. 2,815-82 ft., completed in Kinzie zone of Pliocene age.

Standard Oil Co. 89-5-K fee, 5-11n-22e, pumped 2 bbl., 15.8-gravity oil and 2 bbl. of water, T.D. 2,777 ft., perf. 2,761-77 ft., completed in Kinzie sand of Pliocene age.

Mount Poso, Kern County: Chanslor-Canfield Midway Oil Co. 6 Mon, 26-27s-28e, pumped 98 bbl., 15.6-gravity, T.D. 1,597 ft., perf. 1,557-97 ft., completed in Vedder zone of Miocene age.

Mount Poso wildcat district, Kern County: Ring Oil Co. 1 Glide, 19-26s-28e, dry, T.D. 1,970 ft., top barren Vedder zone of Miocene age, 1,942 ft.

Riverdale, Fresno County: Amerada Pet. Corp. 4-15 Young, 15-17s-19e, flowed 335 bbl., 39.2-gravity, 0.1 per cent cut, 476,000 cu. ft. gas, 11/64-in. bean, pressures 1,360/1,010 lb., T.D. 8,500 ft., P.B. 6,852 ft., perf. 6,740-43 ft., 6,747-52 ft., 6,782-92 ft., completed in Lawton zone of Miocene age.

Wheatville wildcat district, Fresno County: General Petroleum Corp. 88-9 Noble, 9-17s-18e, dry, T.D. 8,508 ft., Kreyenhagen 7,655 ft., Eocene 8,050 ft., bottomed in Cretaceous, top Cretaceous not determined.

Deep Discovery at Del Valle to Be Completed in Near Future

R. E. Havenstrite, who discovered a new deep zone in the Del Valle field of Los Angeles County a few weeks ago, is at present testing by stages and making plans to complete this potential producer in the immediate future. On the basis of tests made in 2 Barnes this new zone will prove to be an important one and may be sufficiently prolific to save this district from proving to be a dud. Del Valle looked like a very good field when discovered by Havenstrite but the area has failed to come up to expectations due to irregular production and limitation in the amount of productive acreage. The new zone looks quite good and may eventually be found to be of major importance. It is believed to be the probable equivalent of the lower Porter zone at Aliso Canyon and the deep Lechler zone found by Western Gulf Oil Co. in the Oak Canyon field. In the San Martinez field located west of Del Valle, Standard Oil Co. and Ohio Oil Co. are testing the Videgain zone of Pliocene age in their respective wells on the Vasquez and Sepulveda leases. On formation tests, both wells showed large capacities and considerable gas volume so it is quite probable that both wells will show relatively large production. Standard Oil Co. proved up the existence of Pliocene production in the San Martinez field some time ago by completing a large flowing well on the Sepulveda lease. Previously all production in this field came from Miocene and strange as it may seem the Pliocene looks better than the Miocene from a production standpoint. The Pliocene is absent in the west end of the San Martinez field but is present in the eastern end of the field which tends to indicate the possibility that it may extend across the half-mile interval existing between the western end of Del Valle and the eastern end of San Martinez.

COASTAL DISTRICT COMPLETIONS

Castaic wildcat district, Los Angeles County: Texas Co. 1 Towle, 3-4n-17w, dry, T.D. 7,218 ft., several good oil and gas showings logged but none justified production test.

Santa Maria Valley, Santa Barbara County: Hancock-Bush 4 Brown, 25-10n-34w, flowed 920 bbl., 1.1 per cent cut, 64/64-in. bean, pressures 285/500 lb., T.D. 4,168 ft., perf. 3,288-4,168 ft., completed in Monterey of Miocene age.

Ventura Avenue, Ventura County: Lloyd Corp. 3 Lloyd, 23-3n-23w, recompleted flowing 190 bbl., 31.9-gravity, 2 per cent cut, 110,000 cu ft. gas, 16/64-in. bean, pressures 240/1,250 lb., T.D. 10,360 ft., P.B. 9,435 ft., perf. 8,780-8,860 ft., gun perf. 9,470-9,510 ft., no fluid; 9,260-65 ft. tested wet; 8,806-10 ft., oil showing; 8,790-8,860 ft. oil and gas.

Development Shows Increase In Montebello Field

Standard Oil Co. is increasing its development program in the Montebello field of Los Angeles Basin but the six wells now drilling or scheduled to get under way shortly will be finished in the upper Pliocene zone which yields a crude oil averaging around 22° in gravity. These 2,850-ft. holes will require a minimum of pipe and will produce a desirable gravity of crude oil. St. Helens Petroleum, now operating as Kern Oil Co., is also making plans to drill a new well to the shallow zone and spud will probably be made within the next 10 days. Montebello's failure to yield Miocene production in the older section of the field has been one of the most disappointing things in connection with the present demand. Standard Oil Co. drilled a series of deep wells in Montebello a few years ago but failed to find a productive Miocene sand. Several horizons were found highly productive out on the extreme western end of the structure but in the original field where structural conditions were more conducive

(Continued on Page 95)

EASTERN TEXAS

Location Staked for Deep Test In Northwestern Wood County

By W. D. THORN

DALLAS, Tex. — Magnolia Petroleum Co. embarked on a consistent wildcatting campaign in East Texas, is preparing to move in rotary rig for a new deep test on the Yantis prospect in northwestern Wood County. The new operation will be 1 G. A. McCreight, on a 167-acre tract, and in the center of the north half of Lot 7, E. Esparcia Survey. It is approximately 10 miles southwest of the Coke field.

Magnolia 1 Braly, Mixon prospect wildcat, in northern Cherokee County, logged a thin 2½-ft. streak of porosity in the Pettit lime at 8,676-88½ ft., recovered only drilling mud with no show on a drill-stem test. It drilled ahead, topping the Travis Peak at 8,829 ft. and will be taken to 9,000 ft. before measuring up.

Magnolia 2 Campbell, just northeast of the Concord field discovery well, Anderson County, topped Woodbine at 4,770 ft., water sand at 4,790 ft., Georgetown lime at 4,940 ft .and was plugged and abandoned in top of the Georgetown section.

American Liberty Oil Co. and Russell Grimes et al 1 M. B. Ellis, John Daly Survey, 5 miles northeast of Grapeland in northern Houston County, opens a new wet gas field from the Woodbine sand. Bottomed at 5,980 ft., it perforated casing at 5,932-39 ft., washed for 1 hour and then blew gas and wash water. Shut in for a week while building separator, it was opened and gaged 10,000,000 cu. ft. of wet gas daily through ¾-in. choke, with 1,960 lb. casing pressure and 960 lb. tubing pressure.

Southern Production Co. 1 Lamber, Joaquin field, Shelby County, after testing 50,000,000 cu. ft. of gas from perforations at 4,974-84 ft. and 5,038-44 ft., is now testing perforations at 5,052-56 ft. and is reported making about 10 bbl. of fluid hourly through ¼-in. choke, cut 6 per cent b.s. and w., balance 36-gravity oil.

Imperial Petroleum Co. 1 Hansen, wildcat 2 miles northeast of Shelbyville, showed 2,000,000 cu. ft. of gas and a spray of oil after perforating at 4,122-30 ft., but after treating with 500 gal. of acid swabbed dry with no shows. It then used 10-qt. nitro shot inside casing at 4,122-26 ft. and is reported flowing oil, gas and salt water.

EAST TEXAS COMPLETIONS

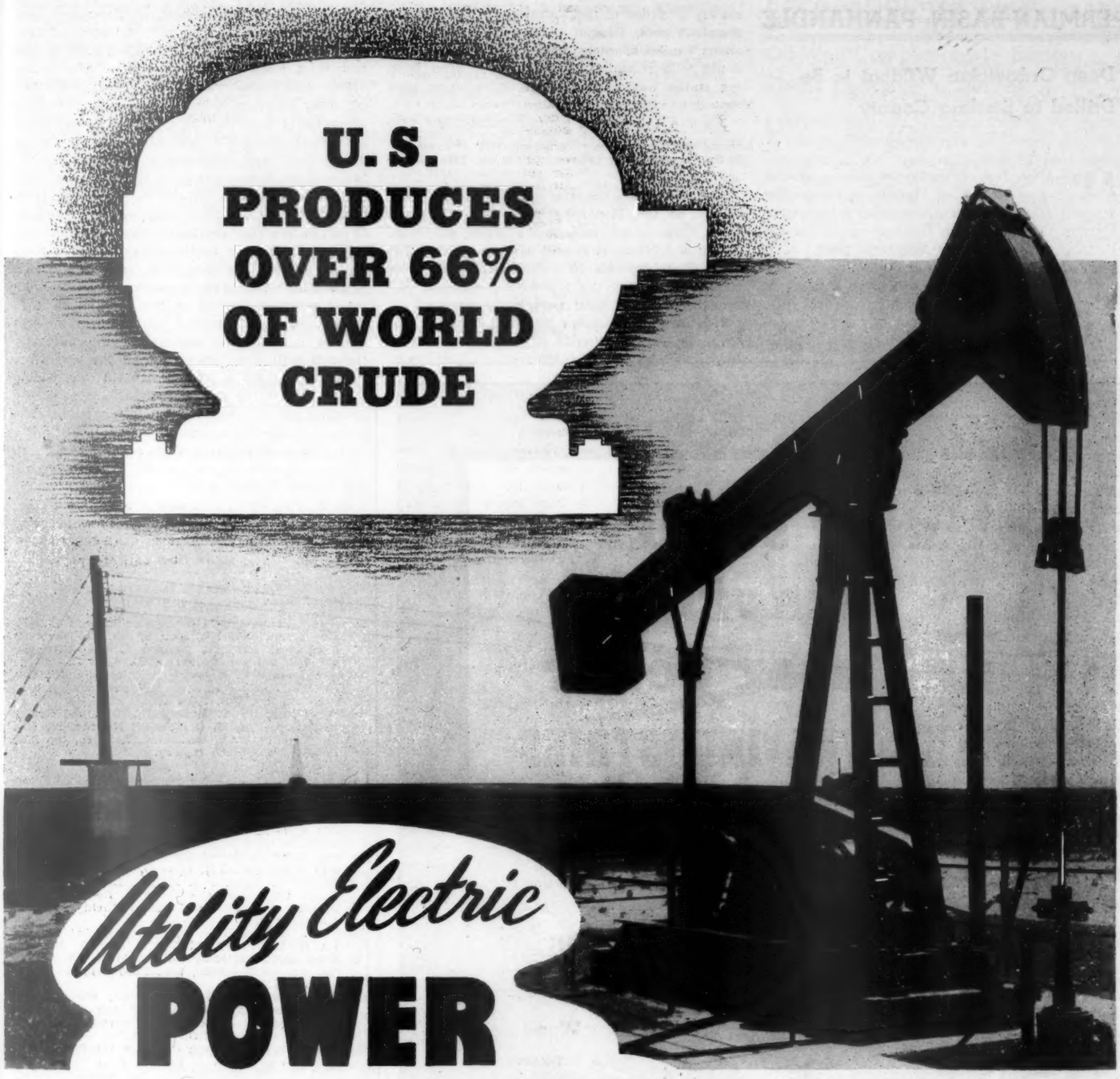
Fields

Flag Lake, Henderson County: Hines-Hancock Oil Co. 2 Dillard, H. Jeffries Sur., pumped 14 bbl. day, T.D. 3,023 ft.

Hines-Hancock 3 Dillard, H. Jeffries Sur., pumped 26 bbl. oil, 2 per cent b.s. and w., T.D. 3,004 ft.

Coke, Wood County: Amerada 1 Foster unit, B. Smith Sur., flowed 92 bbl. 8 hr., ¼-in. choke, perf. 6,332-45 ft., T.D. 6,393 ft.

Hawkins, Wood County: Humble O. & R. 4 J. B. Smith, W. Herrington Sur., flowed 169 bbl. day, ¼-in. choke, T.D. 4,902 ft.



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PERMIAN BASIN, PANHANDLE

Deep Ordovician Wildcat to Be Drilled in Sterling County

By W. D. THORN

MIDLAND, Tex.—Ohio Oil Co. has let drilling contract to J. Fred Postelle, of Odessa, for a new 8,500-ft. Ordovician wildcat in southeastern Sterling County, and on the eastern side of the Permian basin. It will be designated Ohio 1 L. T. Clark, located 1,980 ft. from the south line and 1,980 ft. from the west line of Section 6, Block A. R. R. Wade Survey. Ohio recently core drilled its lease block of 20,000 acres out of the 32,000-acre Clark ranch. Nearest deep production is approximately 50 miles to the southwest in the 9,000-ft. Barnhart pool, Reagan County. The location is about 9 miles southeast of Gulf 1-C Foster, abandoned wildcat which quit at 8,117 ft. after flowing sulfur water from porous Ellenburger lime topped at 8,080 ft.

Humble 1 Newman, Scurry County test also seeking deep production on the east side of the basin, was drilling below 7,120 ft. in black shale and lime streaks.

Shell Oil 2 Sealy-Smith, new 5,600-ft. pay discovery in the Monahans pool of northeastern Ward County, has cemented a string of 7⅝-in. casing at 5,741 ft. It should be ready to test this week. The large-size oil string will permit hole being deepened to the 10,000-ft. Ellenburger pay zone when and if such operation is desired.

Tide Water Associated 24 W. D. Johnson, an old producer in Section 28, Block 34, H.&T.C. Survey, Estes-South Ward field, obtained good production in deepening from old total depth of 2,613 ft., logging increase in pay between 2,884 ft. and new total depth of 3,000 ft. in lime. After using 410-qt. shot, it was recompleted flowing 508 bbl. oil daily through ¾-in. tubing choke, showing pressures of 25 lb. on tubing and 100 lb. on casing. Atlantic Refining Co. and Standard Oil Co. of Texas also have completed a good well in the Magnolia Sealy-South field of Ward County, their 2 University flowing 536 bbl. daily through ¼-in. tubing choke from reef lime pay at 2,913-17 ft. Crude in this area has high-octane rating.

A new pay zone in the upper Permian lime, but deeper in the section than usual, is indicated in Shell Oil 1 Leaverton, a projected 7,500-ft. wildcat 4 miles southwest of the Wasson field in Gaines County. It topped San Andres lime at 4,490 ft., has cored and tested intermittently through drill stem practically all the way from 4,875 ft. to 5,850 ft., where it still was coring ahead. Most of the cores have shown some stains, bleeding oil in places, with sulfur odors. The promising showing was on drill-stem test at 5,705-93 ft., open 60 minutes, with recovery of 75 ft. of mud cut with oil and gas, and no water. Main pay in the Wasson pool is approximately 4,900-5,200 ft. Two wells, both drilled by Amon G. Carter, have been completed in deeper zones, one at the 6,800-ft. level, the other at 7,200 ft. Shell's 1 Leaverton still is above both of these pays.

WEST TEXAS COMPLETIONS

Wildcats

Andrews County: Mid-Continent Pet. Corp. 1 University-"South," NW NW Sec. 16, Blk. 10, University Sur., elev. 3,242 ft., pumped 95 bbl. after 410 qt. shot, top pay 4,520 ft., T.D. 4,599 ft.

Lubbock County: J. R. Sharp 1 Elliott, NE NE Sec. 33, Blk. 5, E.L.R.R. Sur., NW part county, elev. 3,307 ft., dry, T.D. 6,404 ft.

Mitchell County: C. T. McLaughlin, Inc., and Cosden Pet. Corp. 1 H. H. Griffin, SE NE Sec. 26, Blk. 28, Twp. 1s, T.&P. Sur., elev. 2,133 ft., top lime 1,550 ft., T.D. 2,365 ft., dry.

Fields

Embar-Ordovician, Andrews County: Stanolind 1-W University, SW NW Sec. 19, Blk. 10, University Sur., elev. 3,274 ft., base Permian 7,850 ft., dry, T.D. 8,374 ft.

Continental Oil 9-58 Dean, Lge. 58, Mills C.S.L. Sur., elev. 3,688 ft., flowed 1,007 bbl., top pay 4,935 ft., acid 12,000 gal., T.D. 4,989 ft.

Honolulu Oil Corp. 26-A Mallett, Lab. 5, Lge. 51, Scurry C.S.L. Sur., elev. 3,649 ft., flowed 872 bbl. through casing, top pay 5,046 ft., acid 6,000 gal., T.D. 5,067 ft.

Goldsmith, Ector County: Carl B. King Drilling Co. 1-A H. E. Cummins, NW NW Sec. 32, Blk. 45, Twp. 1n, T.&P. Sur., elev. 3,244 ft., flowed 78 bbl. day, ⅝-in. choke, acid 5,500 gal., pay 4,228 ft., T.D. 4,275 ft.

North Cowden: Sinclair Prairie 2-B Mabel Glass, Sec. 18, Blk. 43, Twp. 1n, T.&P. Sur., elev. 3,076 ft., flowed 637 bbl. day, open tubing, acid 5,000 gal., pay 4,450 ft., T.D. 4,760 ft.

Slaughter, Hockley County: Devonian Oil Co. 7 Hudgens, SW NW Sec. 8, Blk. X, P.S.L. Sur., elev. 3,547 ft., flowed 1,165 bbl. day through casing, acid 11,800 gal., pay 4,985 ft., T.D. 5,025 ft.

Texas Co. 6 Baker, NW NW Lab. 97, Lge. 38, Zavalla C.S.L. Sur., elev. 3,563 ft., flowed 621 bbl. day through casing, acid 4,500 gal., pay 4,995 ft., T.D. 5,023 ft.

Western States Gas. Corp. 16-B Mallett, NW NW Lab. 16, Lge. 49, Scurry C.S.L. Sur., elev. 3,584 ft., flowed 960 bbl. day, acid 9,500 gal., pay 4,990 ft., T.D. 5,030 ft.

Walker, Pecos County: Cardinal Oil Co. 4-C University, SW NE Sec. 25, Blk. 16, University Sur., elev. 2,719 ft., flowed 80 bbl., 1-in. tubing, natural, pay 1,772 ft., T.D. 1,785 ft.

Taylor-Link, Pecos County: Stanolind 5-K University, elev. 2,664 ft., deepened from 1,740-75 ft., acid 1,000 gal., pumped 74 bbl. oil and 17 bbl. water day, T.D. 1,775 ft.

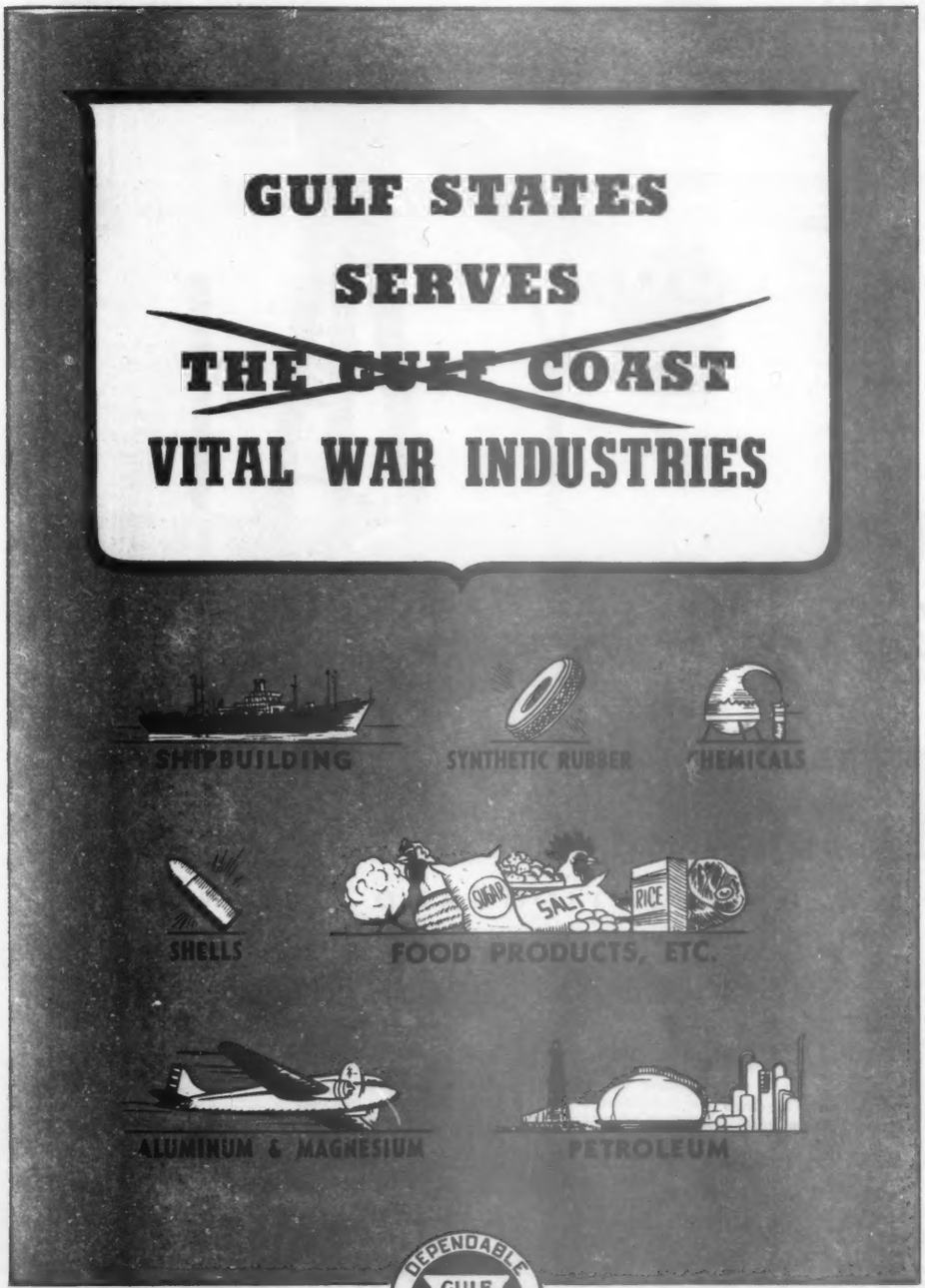
Conry-Davis field, Pecos County: Texas Co. 1 H. J. Eaton, Lot 34, Sec. 15, Blk. 2, H.&T.C. Sur., elev. 2,371 ft., flowed 44 bbl. day, ⅛-in. choke, acid 1,000 gal., pay 2,284 ft., T.D. 2,311 ft.

Grayson, Reagan County: Skelly Oil 7 Grayson-University, SE SE NE Sec. 34, Blk. 8, University Sur., elev. 2,903 ft., pumped 32 bbl. day, natural, pay 3,078 ft., T.D. 3,105 ft.

South Magnolia-Sealy, Ward County: Atlantic and Standard Oil of Texas 2 University, NE SW Sec. 12, Blk. 16, University Sur., elev. 2,656 ft., flowed 536 bbl. day, ¾-in. choke, natural, pay 2,913 ft., T.D. 2,917 ft.

Estes, Ward County: Texas Co. 5-C University, SE NE Sec. 5, Blk. 16, University Sur., elev. 2,592 ft., flowed 171 bbl. day, plus 3 per cent water, ⅝-in. choke, 120-qt. shot, pay 2,515 ft., T.D. 2,536 ft.

(Continued on Page 95)



General Offices—Beaumont, Texas, and Baton Rouge and Lake Charles, Louisiana

NORTH CENTRAL TEXAS

New Bend Conglomerate Pool Assured in Montague County

By W. D. THORN

WICHITA FALLS, Tex. — Sinclair Prairie Oil Co. 1 Eanes, wildcat in southwestern Montague County, swabbed and flowed oil and gas in sufficient quantity last week to assure opening of a new field from Bend conglomerate pay. From casing perforations at 5,912-22 ft., it swabbed 50 to 60 bbl. of oil per day, then reperforated higher in the section at 5,828-40 ft. and showed a good increase in oil. It made a few small flows while swabbing and was shut in to build storage before completing.

Elsewhere in the North Texas districts the week's field reports show little encouragement in the search for new fields. Stanolind 1 Menasco, Bend conglomerate discovery in Wise County, had built tanks and was scheduled to resume testing last week end. Humble 1 Mathews, new Mississippian lime discovery in Throckmorton County, also remained shut in, waiting on storage before taking potential test. Last gage was 73 bbl. oil and 17 bbl. acid water in 1 hour and 45 minutes through $\frac{8}{16}$-in. tubing choke.

Production possibilities looked doubtful at Magnolia 1 Medley, located on the southwest edge of the Forestburg Marble Falls lime field in southeastern Montague County. It topped first saturation at 7,240 ft., made a 28-minute drill-stem test from 7,228-75 ft. which recovered 220 ft. of drilling mud with an odor of oil. It is setting casing and will acidize after drilling plugs. Only one of the five producers in this field showed oil in appreciable quantity prior to treating with acid. Magnolia's test is some 20 to 30 ft. low, structurally.

Forestburg has been hailed as one of the few deep fields in North Texas where offset locations to a discovery well also have been productive in the discovery-pay zone. That the field's potentialities may not be too great, however, is indicated in the report that its wells are not now able to produce their "discovery rate" allowables of 320 bbl. each.

WEST CENTRAL TEXAS COMPLETIONS

Wildcats

Brown County: Ungren & Frazier 1 J. F. Lane, C. B. Jennings Sur. 353, dry, T.D. 1,338 ft.

Shackelford County: J. W. Keys 1 A. Andrews, Sec. 34, E.T.R.R. Sur., oil sand 579-81 ft., pumped 8 bbl. day, T.D. 583 ft., P.B. 581 ft., *discovery*.

T. S. Stanfield 1 J. L. Todd, Sec. 10, B.A.L. Sur., dry, T.D. 665 ft.

Fields

Avoca pool, Jones County: Fain-McGaha Oil Corp. 1 A. E. Olson, Sec. 189, B.B.B.&C. Sur., dry, T.D. 3,280 ft.

Lewis pool, Jones County: Algord Oil Co. 2 J. T. Badgett, Sec. 5, Blk. 15, T.&P. Sur., dry, T.D. 1,970 ft.

Wimberly pool, Jones County: Fain-McGaha Oil Corp. 1 W. L. Butler, Lot 5, L. B. Ramsey Sur. 39, flowed 76 bbl. oil 3 hr. through ½-in. choke, natural, lime pay 2,183-88 ft., sand pay 2,188-2,200 ft., T.D. 2,200.5 ft.

E. L. Wilson et al 1 R. F. Mashburn et al, Lot 86, Godwin subd. of De Witt C. S. L. Sur. 126, flowed 136 bbl. in 4 hr., ½-in. choke, natural, pay 2,391-2,400 ft., T.D. 2,400 ft.

Fain-McGaha Oil Corp. 1 Dunigan-J. M. Varner unit, Lot 89, Godwin subd., De Witt C. S. L. Sur., flowed 78 bbl. 6 hr., ¾-in. choke, natural, pay 2,303-12 ft., T.D. 2,312 ft.

Cook pool, Shackelford County: Roeser-Pendleton and Continental Oil 18-A-117 W. J. Cook estate, Sec. 117, E.T.R.R. Sur., dry, T.D. 1,720 ft.

Eliasville area, Stephens County: Christie Brothers 1 S. R. Donnell, Sec. 1207, T.E.&L. Sur., flowed 18 bbl. day by heads plus 80 per cent water after treating 6,000 gal. acid and 70-qt. shot, pay 3,906-25 ft., T.D. 4,375 ft., P.B. 3,925 ft.

Reddin pool, Taylor County: Butler & Horne et al 2 C. H. Hudson, subd. 3 of Nabers Sur. 9, flowed 300 bbl. 7 hr., ¾-in. choke, natural, pay 2,233-39 ft., T.D. 2,239 ft.

NORTH CENTRAL TEXAS COMPLETIONS

Wildcats

Archer County: Perry Browning 1 fee, Sec. 89, German Emig. Sur., potential 585 bbl. day, dolomite pay 5,200-5,330 ft., acid 10,000 gal., T.D. 5,330 ft., *discovery*.

George Proctor 1 Langford, Sec. 128, J. W. Harris Club Ranch Sur., dry, T.D. 2,281 ft.

Denton County: C. H. Gannon 1 McBride estate, R. W. Wright Sur., A-1437, dry, T.D. 2,214 ft.

Jack County: Joe A. Worsham 1 L. A. Meador et al, Lot 22, Blk. 1, Henderson C.S.L. Sur., A-257, junked hole, T.D. 5,277 ft.

Montague County: Continental Oil Co. 1 O. C. Hildreth et al, Sec. 53, E.T.R.R. Sur., A-250, potential 329 bbl. day, lime pay 7,170-7,201 ft., T.D. 7,256 ft., *discovery*.

Wilbarger County: Wood and Closuit 1 W. T. Waggoner, Sec. 16, Blk. 5, H.&T.C. Sur., dry, T.D. 1,880 ft.

Fields

Megargel, Archer County: L. T. Burns 1 J. McAnally, Lot 8, G. P. Meade Sur., pumped 35 bbl., pay 1,443-48 ft., T.D. 1,448 ft.

L. T. Burns 1 C. A. Perrin, Blk. 7, G. P. Meade Sur., dry, T.D. 1,507 ft.

William K. Clark 2 G. A. Key, Blk. 2, G. P. Meade Sur., dry, T.D. 1,434 ft.

Ross, Clay County: Continental Oil, Superior, and Dillard 1 W. E. Williams, William Walker Sur., A-703,

(Continued on Page 95)

APPALACHIAN FIELDS

Oil-Well Completions in Eastern Fields Continue to Decline

PITTSBURGH, Pa. — Completions in the lower eastern fields during the past week included a number of dry holes and new oil production has been getting scarce with nothing in sight to accelerate wildcatting. Two of the deep tests in Southwest Pennsylvania reached the Onondaga lime.

SOUTHWEST PENNSYLVANIA

In Slippery Rock Township, Lawrence County, T. W. Phillips Gas & Oil Co. topped the Onondaga lime at 4,510 ft. in the test on the Delilah Hill farm and reduced the hole to 6 in. at 4,535 ft. and are drilling to the Oriskany.

On Chestnut Ridge in South Union Township,

JERGUSON

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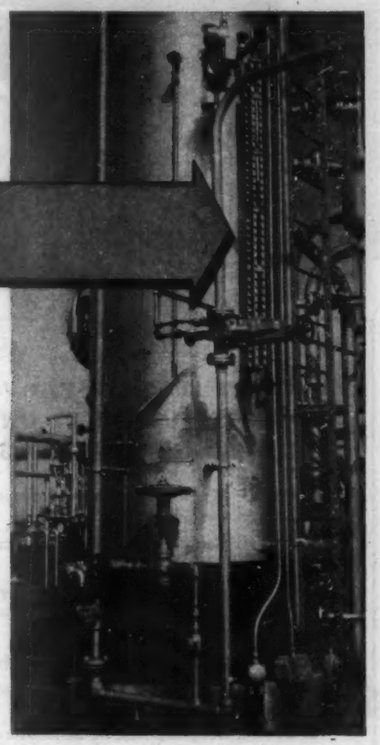

Standard Transparent gages are designed for pressures up to 2000 pounds at 100° F. or up to 600 pounds at 1000° F. Special gages to order.

READABILITY and dependability—two characteristics every gage must have to be useful. Without them the purchase of a gage becomes a gamble, not a sound investment in a durable, useful accessory to a tank, column, still, boiler or other apparatus where the depth or condition of a liquid must be surely determined at a glance.

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DRESSER COUPLINGS ARE FOOLPROOF STRONG, AND PERMANENTLY TIGHT

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Check THESE 12 PROVED ADVANTAGES THAT ONLY DRESSERS GIVE YOU

1. Dresser Couplings eliminate all uncertainty in joint-making.
2. Dresser Couplings permit use of local, untrained labor.
3. Dresser Couplings provide the only time-proved method of absorbing expansion and contraction.
4. Dresser Couplings give greater speed.
5. Dresser Couplings simplify both pipe and joint specifications.
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10. Dresser Couplings cut maintenance costs.
11. ✓ Dresser Couplings are fool-proof, strong, *permanently* tight.
12. Dresser Couplings eliminate health and fire hazards.

After all is said and done, the final proof of a pipe-joint is tightness—*permanent* tightness. All else is secondary.

And the only test of permanent tightness is long-time field performance. A pipe-joint must not only test leakproof at the start, but it must remain leakproof for the life of the line.

That is why men who look ahead specify Dresser Couplings. For there is never a doubt about Dressers. For over half a century, on over 150,000 miles of pipe-line their tightness has been *proved*. Their in-built strength, sound basic design, and ability to withstand expansion and contraction are matters of factual record.

Yet Dressers can be installed by ordinary labor. They go together in only one way—the *permanently-tight* way. They are ready-made, *foolproof*. Only a wrench is needed to install.

Weigh all these advantages—compare Dressers' record with all other methods—and you'll specify them *without a doubt*.

DRESSER MANUFACTURING COMPANY • BRADFORD, PA.

DRESSER PIPE COUPLINGS

Save Labor • Save Time • Save Worry—with Dressers

Fayette County, Greensboro Gas Co. topped the Onondaga lime at 7,302 ft. in 2 Barton and casing is being run to 7,317 ft. In their No. 3 the tools are back in shale again at 7,075 ft. Here New Penn Development Co., William E. Snee et al are drilling at 2,592 ft. in 2 Indian Creek Coal Co.

SOUTHWEST PENNSYLVANIA COMPLETIONS

Armstrong County, Valley Township: Humphries, Stone & McCall 1 Joseph Adams, dry through Bradford sand, T.D. 3,557 ft.

Clarion County, Red Bank Township: Owens-Illinois Glass Co. 1 Samuel Wallwork, 30,000 cu. ft. gas, Tiona and Bradford, T.D. 3,277 ft.

Greene County, Jefferson Township: Equitable Gas Co. 1 Mary Bruckner, 59,000 cu. ft. gas, Bayard sand 2,988-3,010 ft., gas 2,989-3,001 ft., T.D. 3,073 ft.

Morgan Township: Morgan Henderson et al 1 A. W. Sargent, 35,000 cu. ft. gas, Bayard sand 3,190-3,210 ft., gas 3,198 ft., T.D. 3,344 ft.

WEST VIRGINIA

Considerable activity is noted in Raleigh County, West Virginia, where tests are being drilled in Trap Hill, Shady Spring and Marsh Fork districts. In Wyoming County, there is activity in Oceana, Center, Ruff Creek and Slab Fork districts. Another test is drilling in Browns Creek district, McDowell County.

WEST VIRGINIA COMPLETIONS

Boone County, Peytonia district: United Carbon Co. 1 Silver Coal & Land Co., 412,000 cu. ft. gas, Big lime topped 1,378 ft., T.D. 1,544 ft.

Hope Natural Gas Co. 8598 Rock Creek Colliery, through Berea, dry, T.D. 2,294 ft.

Cabell County, McComas district: Cumberland Gas Co. 2 Catherine B. Riley, 29,000 cu. ft. gas, Berea, 60,000 cu. ft. gas, brown shale, Big lime 1,368 ft., Injun 1,620 ft., Berea 2,187 ft., brown shale 2,960 ft., T.D. 3,292 ft.

Calhoun County, Lee district: Hunt and Adams 1 Samuel Digman, 1½ bbl. and 84,000 cu. ft. gas, Big Injun.

Sherman district: South Penn Natural Gas Co. 12 J. S. Sharpes, 5 bbl., Injun sand, T.D. 2,243 ft.

Clay County, Henry district: Pittsburgh & West Virginia Gas Co. 7867 Elk River Coal & Lumber Co., dry through Injun sand, T.D. 2,190 ft.

Pittsburgh & West Virginia Gas Co. 7871 Elk River Coal & Lumber Co., 214,000 cu. ft. gas after shot, T.D. 1,906 ft.

Thompson Gas Co. T58 Newton Nichols dry through Injun sand, T.D. 2,113 ft.

Pleasant district: Thompson Gas Co. T57 Elk River Lumber Co., dry through Injun sand, T.D. 2,020 ft.

Thompson Gas Co. T59 Thompson C. & L. Co., 239,000 cu. ft. gas, Injun sand, T.D. 2,320 ft.

Doddridge County, West Union district: Braden & Creighton 6 W. L. Campbell, 8 bbl., Big Injun sand 1,965 ft., shot 1,970-85 ft., T.D. 2,091 ft.

Gilmer County, DeKalb district: E. L. Bush et al 1 M. Stalnaker, 1,000,000 cu. ft. gas, Maxton sand, T.D. 1,762 ft.

Marshall County, Liberty district: Manufacturers Light & Heat Co. 2253 J. S. Gray, drilled deeper, 136,000 cu. ft. gas, Gordon sand, T.D. 2,748 ft.

Manufacturers Light & Heat Co. 3671 August Wendt, dry through Fourth sand, T.D. 3,290 ft.

Putnam County, Curry district: Buff Creek Gas Co. 1 Mary Walk, 103,000 cu. ft. gas tubed, Big lime 1,608 ft., Injun 1,780 ft., Berea 2,318 ft., T.D. 2,857 ft.

Ritchie County, Clay district: McBurney et al 1 Henry C. Schulte, 240,000 cu. ft. gas, Injun sand, T.D. 2,095 ft.

Jones & Woodyard 1 J. R. and Ida Marsh, 3 bbl., Cow Run sand, T.D. 1,210 ft.

Grant district: South Penn Natural Gas Co. 3 Foy heirs, 500,000 cu. ft. gas, Injun sand, T.D. 1,935 ft.

Reno Oil Co. 11 J. F. Deem, dry through Squaw sand, T.D. 2,133 ft.

Wayne County, Union district: Owens Libby-Owens 644 Minnie Ray Ealem, 70,000 cu. ft. gas, Big lime 1,374 ft., Injun 1,557 ft., Berea 2,182 ft., brown shale 2,526 ft., Corniferous lime 3,249-3,908 ft., Big Six sand 3,908-70 ft., gas 3,913-17 ft., R.P. 1,355 lb. 11½ hr., T.D. 4,000 ft.

Wetzel County, Grant district: Hope Natural Gas Co. 18 Barr tract, dry through Big Injun sand, T.D. 2,324 ft.

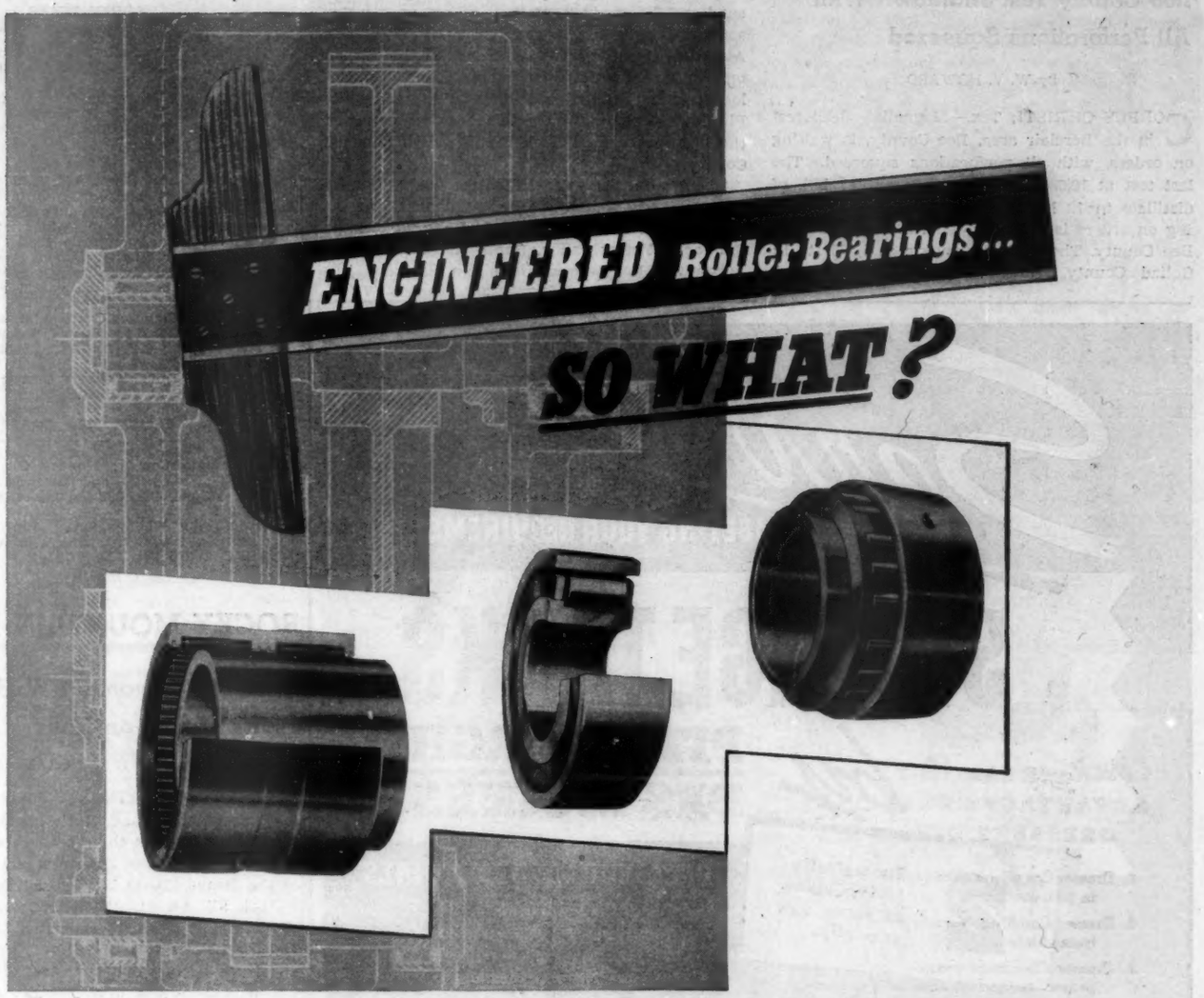
Wood County, Union district: Reno Oil Co. 6 George F. Hendershot, drilled deeper, dry, through second Cow Run sand, T.D. 1,130 ft.

ORISKANY GAS FIELDS

Jackson County, Ripley district: Mullins Gas Co. 1 G. W. Rankin, 8,113,000 cu. ft. gas before shot. Corniferous lime 4,982 ft., Oriskany 5,086 ft. R.P. 1,625 lb. 6 hrs., T.D. 5,106 ft.

United Carbon Co. 1065 Elizabeth W. Perkins, 8,421,000 cu. ft. gas, Corniferous lime 5,036 ft., Oriskany 5,151 ft., T.D. 5,189 ft.

Godfrey L. Cabot, Inc., 1040 Putnam Co., 189,000 cu. ft. gas, Corniferous lime 5,164 ft., Oriskany 5,267 ft., shot 5,270-80 ft., T.D. 5,357 ft.



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Lest you have that "so what?" feeling when we write about "ENGINEERED" Roller Bearings may we revitalize the term by pointing out that:

AMERICAN HEAVY DUTY Roller Bearings are *not* just picked out of a stock bin to fill your order . . .

AMERICANS are *specification* bearings . . .

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SOUTHWEST TEXAS

Bee County Test Shutdown With All Perforations Squeezed

By W. V. HOWARD

CORPUS CHRISTI, Tex.—Magnolia's deep test in the Berclair area, Bee County, is waiting on orders, with all perforations squeezed. The last test at 10,080-10,120 ft. made only 7 bbl. of distillate in 12 hours through choke. Also waiting on orders is Stanolind 1 M. S. Gould, also in Bee County. The well is standing at 9,500 ft. In Goliad County, Ginther, Warren & Ginther 1 Wood was tested at 5,031-42 ft. and recovered mud with a slight show of oil.

Ogden & Voyles 1 Richardson, a Duval County wildcat 3 miles south of Kohler, found the Cole sand at 1,780 ft. At 2,853 ft. it picked up a water sand and is drilling ahead at 2,957 ft. Humble's Atascosa County potential Edwards lime pool opener is still waiting on pump. No new wildcat locations were announced during the week while Phillips Petroleum Co. has temporarily abandoned the location of its 1 T. M. Treadwell in Menard County.

The deepest test ever drilled in Hidalgo County was reported abandoned by Continental Oil Co. at the week end. It was 1 J. J. Young, in the 8,800-acre Young ranch, Santa Anita grant, between the La Reforma and San Salvador distillate fields. Total depth was 10,201 ft. Odors of gas had been reported at 7,838 ft. and 7,964 ft. but these were not of commercial importance.

SOUTHWEST TEXAS COMPLETIONS

SOUTH TEXAS

Wildcats

Duval County: Plymouth 5-C Hoffman, B.S.&F. Sur., Sec. 113. A 118, 1½ mi. NW of Tarancahuas field, dry at 3,351 ft.

H. Coquat and Hiawatha O. & G. (was F. P. Zoch, Jr.) 1 Julia de Caballero, dry at 6,211 ft.

Zapata County: Dulup Oil Co. 6 Garza estate, dry at 1,656 ft.

Fields

Casa Blanca, Duval County: M. L. Massingill 19 D.C. R.C. Sur. 293, pumped 28 bbl. at 1,052 ft.

Colorado, Duval County: Humble 2 T. T. East, flowed at rate of 200 bbl. on ¼-in. choke, T.P. 390 lb., C.P. 600 lb., gas-oil ratio 125:1, T.D. 3,156 ft.

North Sun, Starr County: Sun 1 F. Olivares, flowed at rate of 150 bbl. through 9/64 in. choke, T.P. 800 lb., C.P. 1,000 lb., gas-oil ratio 716:1, T.D. 4,548 ft.

Rincon, Starr County: Continental and Davis 67-H Slick estate, flowed 200 bbl. through ¼-in. choke, T.P. 420 lb., C.P. 900 lb., gas-oil ratio 346 lb., T.D. 3,957 ft.

Seven Sisters, Duval County: George Lyles 3 P. T. Wright, dry at 2,601 ft.

LOWER GULF COAST

Fields

Greta, Refugio County: Monday Oil Co. 4 J. F. B. Heard, flowed 83 bbl. through 7/64-in. choke, T.D. 375 lb., C.P. 525 lb., gas-oil ratio 225:1, T.D. 4,460 ft.

Seeligson, Jim Wells County: Sun 17 P. Canales, flowed 184 bbl. through ⅛-in. choke, T.P. 775 lb., C.P. 975 lb., T.D. 6,000 ft.

ROCKY MOUNTAIN AREA

Southeast Wyoming Wildcat Flows 15 Bbl. an Hour

By T. R. INGRAM

DENVER, Colo.—The outstanding development of the week and of the year in the Rocky Mountain area was the discovery of a new pool on the Horse Creek structure, northwestern rim of the Denver Basin by General Petroleum Corp. 78-31-G, SW SE SE 31-17n-68w, Laramie County, Wyoming, in 58 ft. of saturated Lakota sand. It had the Lakota at 5,451-5,510 ft., with shale break at 5,489-90 ft. In a drill-stem test of the upper section it made 27 bbl. in 30 minutes and in another test of the lower 20 ft. it made 15 bbl. in 1 hour.

Continental Oil Co. finished its development program in the Circle Ridge field in Fremont County, Wyoming, this week with the completion of 3 Shoshone-309 at 310 ft. for 10 bbl. an hour from the Embar on a bailing test. It is a twin well to 1 Shoshone, which made 77 bbl. in 24 hours from the Tensleep at 873 ft. Altogether, 10 wells were drilled with a high production record of around 500 bbl. a day.

Montana Crude Price Raised

Crude prices in northern Montana are on an upward trend with new postings by the Northwest Refining Co. and the Big West Oil Co. Cut Bank crude was advanced from $1.10 to $1.20 and Kevin-Sunburst from 90 cents to $1, effective October 1. The old prices were below the ceiling established by OPA.

COLORADO COMPLETIONS

Rangely, Rio Blanco County: Raven Oil & Ref. Co. 42, NW SW NE 31-2n-102w, T.D. 1,223 ft., fractured calcite zones at 995-1,000 ft., 1,115-30 and 1,132-1,223 ft., 90 bbl. 41.5 gravity.

MONTANA COMPLETIONS

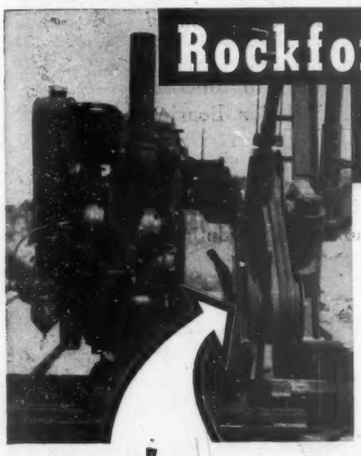
Bowdoin, Phillips-Valley counties: Montana-Dakota Utilities Co. 696, C SE 15-32n-34e, T.D. 960 ft., Bowdoin sand 715-60 ft., Phillips sand 880-920 ft., 648,000 cu. ft. gas.

Montana-Dakota 697, near C SW 14-32n-34e, T.D. 972 ft., Bowdoin 708-58, Phillips 903-40 ft., 648,000 cu. ft. gas.

Montana-Dakota 698, near C NW 14-32n-34e, T.D. 990 ft., Bowdoin 730-80 ft., Phillips 925-65 ft., 627,000 cu. ft. gas.

Montana-Dakota 699, SE NW SW 13-32n-34e, T.D.

(Continued on Page 95)



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Make Economical High Grade Installations In Power Units

Rockford Power Take-Offs and Plate Clutches are extensively used in power units because their economy, high quality, and consistently fine performance promote maximum advantages all around. The 15 h.p. Diesel pumping unit illustrated has a Rockford Power Take-Off with Over-Center Clutch . . . a great performance combination on small engines as well as those for the heavier services. Out-Spring-Loaded Clutches can also be furnished for similar applications when automobile-type control is indicated.

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Rockford Power Take-Offs are made in many standard sizes for S.A.E. flywheel housings, and take any suitable clutch. Rockford Clutch capacities range up to 80 h.p. at 100 r.p.m. Investigate.

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KANSAS, NEBRASKA

Viola Lime Producer Extends Lindsborg Field Southwest

By CARL HOOT

THE two-zone Lindsborg pool of McPherson County, which has been the scene of extensive drilling over the past few months, was given new impetus last week when Lario Oil & Gas Co. 1 Hoffman, W½ NE SW 25-17-4w, made a flow of oil on drill stem test in Viola lime topped at 3,402 ft. The oil tested 45 gravity with no water. While recent drilling has carried the field to the north and east in Simpson sand, location of the 1 Hoffman is 1¾ miles southwest of nearest production in the pool.

Aylward Producing Co. 1 Ehrlich, a wildcat in SW SW NW 15-13-14w, carried the Russell pool of Russell County almost a mile north when it pumped 430 bbl. of oil a day from Lansing lime at 2,890-3,005 ft. Drilled to 3,291 ft., a show of heavy black oil was found in Arbuckle at 3,244-54 ft. The hole was then plugged back to 3,007 ft., where it made initial potential in the Lansing.

A new Arbuckle lime oil pool was found by Vickers Petroleum Co. 1 Curtis, SE SW NW 6-22-13w, between the Drach and Roach pools of Stafford County in western Kansas. At last report a potential test had not been made but the hole filled 2,200 ft. with oil from pay at 3,693-3,700 ft. when the cement plug was drilled.

Kansas' production week set another all-time high at 303,900 bbl., a daily average increase of 1,000 bbl. over the previous week. With increased allowables, exploration work in the state started an upward trend early in 1941, exceeding 1940 by 40 per cent. Indications are that a new record in wildcatting will be set this year. With the exception of Texas, more new oil reserves have been found in Kansas over the past year than in any other state. Many oil authorities agree that when western Kansas' proven areas are fully developed, the state will rank second in production.

KANSAS COMPLETIONS

Fields

Ainsworth, Barton County: Barton Mabee 2 Stoskopf, SE SW NW 29-16-13w, dry, T.D. 3,396 ft.
R. Olsen et al 2 Stoskopf, SE SE NW 29-16-13w, pumped 12 bbl., Arbuckle 3,386-91 ft.
Beaumont, Greenwood County: George Henderson 1 Lewis, NW NW NE 36-27-8e, dry, T.D. 2,762 ft.
Bemis, Ellis County: Champlin Ref. 6-B Hadley, E½ NW SW 29-11-17w, 2,346 bbl., Arbuckle 3,478-95 ft., T.D. 3,505 ft.
Chase, Rice County: Cities Service 2-A Dick, SE SW 9-20-9w, 530 bbl., Arbuckle 3,242-55 ft.
Deichman, Cowley County: Stelbar Oil 1 Knapp, SW NW 23-32-3e, dry, T.D. 3,485 ft.
Hall-Gurney, Russell County: Skelly 6 Ehrlich, SE SW 34-14-13w, 948 bbl., Lansing 2,908-35 ft., T.D. 3,197 ft.
Iuka, Pratt County: Atlantic et al 1-C Harrell, SW SW SE 2-27-13w, 987 bbl., Simpson 4,249-56 ft.
Kraft-Prusa, Barton County: George Johnston 2 Oeser North, NE NE NW 30-16-11w, 248 bbl., Lansing 3,064-68 ft.
Republic Natural Gas 4-B Bloomer, SW NW 14-17-11w, 528 bbl., Arbuckle 3 300-25 ft.
Vickers Pet. 3 Soeken, NE SE SE 21-17-11w, 24 bbl., Arbuckle 3,286 ft., T.D. 3,306 ft.
Laton, Rooks County: Max Cohen 3 Doane, S½ NW SE 34-8-16w, 514 bbl., Lansing 3,121-56 ft.
McLouth, Jefferson County: Hatcher-Fisk 3 Hesse, SW SW 21-9-20e, 10,000,000 cu. ft. gas, sand 1,364 ft., T.D. 1,373 ft.
Lost Springs, Marion County: Adair & Morton 1 Stuchlik, NE NW 32-17-4e, 300 bbl., Mississippi lime 2,399 ft., T.D. 2,410 ft.
Ring-Mac Oil 1 Bernhardt, W½ NE SW 4-18-4e, dry, T.D. 2,455 ft.
Potwin, Butler County: Bennett & Abels 3 Maxwell, SW NW NE 31-24-4e, dry, T.D. 2,726 ft.
Silica, Rice County: Cities Service 1 Finger, NW NE 25-19-10w, dry, T.D. 3,343 ft.
Stoltenberg, Ellsworth County: Gulf 5 Svoboda, NW SE 8-16-10w, 179 bbl., Arbuckle 3,310-24 ft.
Stafford, Stafford County: Stanolind 1 Schneider, N½ SW SW 11-24-12w, 3,000 bbl., Viola 3,825-36 ft.
Trapp, Russell County: Braden & McClure 2 Resner, NW NW 23-15-14w, 1,743 bbl., Arbuckle 3,333-36 ft.
Vernon, Sumner County: Sinclair Prairie 7 Herrick, SW NE NE 15-35-2e, 173 bbl., Mississippi lime 3,451-70 ft.
Virgil, Greenwood County: LeBlanc 1-A Sharp, W½ NW SW 7-24-13e, pumped 5 bbl., Mississippi lime 1,643-56 ft., T.D. 1,672 ft.

Wildcats

Ellsworth County: Cities Service 1 Steiner, SE SE SW 7-15-9w, dry, T.D. 3,080 ft., Lansing 2,661 ft., Arbuckle 3,041 ft.
Greenwood County: K. T. Weidemann 1 Edgar, NE NE 10-22-8e, dry, T.D. 3,105 ft., Kansas City 2,092 ft., Mississippi lime 2,767 ft., Arbuckle 3,076 ft.
Leavenworth County: Roxan Oil 2 O'Keefe, NW SW 20-11-22e, 500,000 cu. ft. gas, sand 750 ft., T.D. 850 ft.
Rooks County: Cities Service 1 Baumgartner, NE cor. 25-8-19w, dry, T.D. 3,682 ft., Lansing 3,231 ft., Arbuckle 3,648 ft.
Russell County: Aylward Prod. 1 Ehrlich, SW SW NW 15-13-14w, pumped 430 bbl., Lansing 2,990-3,005 ft., T.D. 3,291 ft.
Hollow Drlg. & Appleman 1 Dumler, SW SE SW 5-14-13w, dry, T.D. 3,394 ft., Lansing 3,040 ft., Arbuckle 3,364 ft.
Sherman County: Sinclair Prairie 1 Mercer, NE NE NW 28-10-40w, dry, T.D. 5,923 ft., no shows.
Wallace County: Sinclair Prairie 1 Wallace Inv. Co., S½ SE SE 22-11-39w, dry, T.D. 4,094 ft.

NEBRASKA

ST. JOSEPH, Mo.—Nebraska Producing & Refining Co. had a dry hole southeast of the Barada pool in Richardson County. Operators had hoped to extend the pool. The test had Hunton lime at 2,475 ft. and cored from 2,481-91 ft. Ten feet of dolomite was recovered with no shows. The test was abandoned. About 6 miles southwest of Beatrice in Gage County, Bee Dee Oil Co. deepened its wildcat, 1 Bankers Life, from 810 to 1,095 ft., but there were no shows.

NEBRASKA COMPLETIONS

Gage County: Bee Dee Oil 1 Bankers Life, NW NW SW 16-3n-5e, dry, T.D. 1,095 ft., old T.D. 810 ft.
Richardson County: Nebraska Prod. & Ref. 1 Bucholz, W½ NW NW 6-2n-17e, dry, T.D. 2,491 ft.

MISSOURI COMPLETIONS

Ray County: William Peppas 1 Miller, NW SE SE 8-53n-28w, dry, T.D. 562 ft.

These Protectors sure went through hell!

Battle-scarred? Sure. But they have a right to their looks.

This string of Patterson-Ballagh Protectors was placed in service 'way back in 1937—more than five years ago, in Northern Louisiana.

The pipe is still serviceable; so are the Protectors.

Tens of thousands of feet of hole have been drilled. The drill pipe has far exceeded normal life. That's service,—and a tribute to the conservation of steel, made possible with Patterson-Ballagh Protectors.

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PATTERSON-BALLAGH PROTECTORS

TEXAS GULF COAST

New Fields Opened in Austin And Chambers Counties

By W. V. HOWARD

HOUSTON, Tex. — Wildcats in Chambers and Austin counties appear to have opened new fields. Sun 1 C. Doornbos, northwest outpost to Fig Ridge, in Chambers County, was drilled to 8,340 ft. in a sidetracked hole and after side-wall cores were taken, casing was set. Perforations at 8,214-30 ft. yielded 720 bbl. of fluid through ⅝-in. choke and the operators are continuing to test.

In Austin County, Ohio 1 Roy Kaechele, V. Flores Survey A-170, 3 miles southeast of Orange Hill, topped the Wilcox at 8,953 ft. and was bottomed at 10,110 ft. Five-inch casing was set at 9,411 ft. and several tests were made yielding unimportant results. Finally casing was perforated at 9,297-31 ft. and 2-in. tubing set at 9,335 ft. Washing yielded no results, but the well responded to swabbing, yielding 1 bbl. of fluid an hour, 55 per cent distillate through ⅛-in. choke. Tubing pressure was 2,450 lb.

E. O. Ehlinger 1 Gibbs Brothers, located in the John Fox Survey A-200, 7 miles south of Huntsville in Walker County, found the Discorbis Jacksonensis zone at 2,102 ft., Textularia Hochleyensis at 2,320 ft., Textularia Dibollensis at 2,934 ft., and at latest reports was drilling ahead in the Cockfield below 4,200 ft. Wilcox is expected at around 6,000 ft.

In the northern part of the area, Grimes and Grimes 1 Ellis, J. Daly Survey A-242, found 7 ft. of oil-bearing Woodbine sand at 5,950 ft. Pressure built up to 2,000 lb. when the well was shut in for separator and storage. The wildcat is 1½ miles northeast of an oil well brought in in 1937 in the Woodbine.

TEXAS GULF COAST COMPLETIONS

Wildcats

Brazoria County: Amerada 1 D. J. Sullivan, M. Henry Sur., A-74, 1½ mi. NE of Velasco, dry at 7,210 ft.

Chambers County: Rowan & Nichols 1 W. H. Land, S. P. Donley Sur., A-89, 4½ mi. S of Anahuac, temporarily abandoned at 9,195 ft., P.B. to 9,037 ft.

Jackson County: Strake Petroleum Co. 1 L. Ranch, I.&G.N. Sur. 26, A-154, 3 mi. S of La Ward, top Catahoula 4,710 ft., Marginulina 5,950 ft., dry at 7,310 ft.

Matagorda County: Continental 3 H. B. Hawkins, J. B. Byrne Sur. 2, A-127, 8 mi. W of Hawkinsville, 1,300,000 cu. ft. of gas through ½-in. choke, T.P. 1,590 lb., T.D. 5,208 ft., P.B. to 3,861 ft.

San Jacinto County: Fain Drilling Co. 1 Hattie Baldwin, S. Arnold Sur., A-64, dry at 10,014 ft.

Wharton County: General Crude Oil Co. 1 S. L. Houston, S. Castleman Sur., A-12, small Discorbis 5,010 ft., large Discorbis 5,105 ft., Heterostegina 5,165 ft., dry at 5,650 ft.

Fields

Big Hill, Jefferson County: Stanolind 4 Mary E. Fitzhugh, S. Eaton Sur., dry at 10,187 ft.

Blue Ridge, Fort Bend County: Superior of Oklahoma 9 West & Schenick, T. Habermacher Sur., pumped 112 bbl., perf. 4,026-36 ft., T.D. 4,120 ft.

Fostoria, Montgomery County: Atlantic 2-A Foster Lbr. Co., M. B. Lawrence Sur., dry at 5,868 ft.

Ganado, Jackson County: Texas 1 T. C. Robertson, J. Simons Sur., A-260, 103 bbl. through ⅛-in. choke, T.P. 500 lb., gas-oil ratio 355:1, perf. 5,430-46 ft., T.D. 6,566 ft.

Maurbro, Jackson County: Humble 2-C Mauritz, B. J. White Sur., A-81, jetted 2½ bbl. oil and 1 bbl. salt water through ¼-in. choke, input pressure 450 lb., T.P. 350 lb., input ratio 3,500:1, pay 5,237-39 ft.

Mayo, Jackson County: Stanolind 2 H. A. Meyer, W. H. Robertson Sur., A-405, 60 bbl. through ¼-in. choke, T.P. 600 lb., C.P. 800 lb., gas-oil ratio 961:1, perf. 5,330-40 ft., T.D. 5,528 ft.

Needville, Fort Bend County: W. L. Goldston 1 J. G. Schmidt, Robert Hodges Sur., 280,000,000 cu. ft. of gas, perf. 5,190-5,200 ft., T.D. 5,256 ft.

West Ranch, Jackson County: Magnolia A-223 West Ranch, Ramon Musquez Sur., A-59, 64,000,000 cu. ft. of gas and a spray of distillate through open tubing, perf. 5,455-61 ft., T.D. 6,292 ft. in salt-water sand.

Withers, Wharton County: Texas B-91 Pierce estate, E.T.R.R. Sur., A-108, 120 bbl. and 2 bbl. water through 12/64-in. choke, T.P. 125 lb., C.P. 100 lb., gas-oil ratio 516:1, pay 5,549-52 ft.

LOUISIANA GULF COAST

Wildcat in Cow Island Area Preparing to Test Four Sands

By W. V. HOWARD

NEW ORLEANS, La.—Union Oil Co. 1-C Louisiana Furs, Inc., in 1-16s-2e, Vermilion Parish, was preparing to test four sands at 11,120-35 ft., 11,322-35 ft., 11,476-94 ft., and 11,575-11,604 ft. The well is south of the extreme west end of Vermilion Lake and is in a 9,925-acre block assembled last year by Union in what is known as the Cow Island area. The area was shot last year.

Union Sulphur 1 Gneno, 51-8s-2e, Acadia Parish, which has been burning for over 2 weeks, still baffles efforts to extinguish the blaze. Operators tried to force 20-lb. mud through the drill stem only to find it cut near the surface. They then shot with 80 qt. of nitro with no results. The drill-stem and blowout preventer were then shot off and an attempt was made to blow out the blaze with a 40-qt. shot with no results. Next a 110-qt. shot was tried, followed by a 160-qt. shot. The last one blew out the flame but after 30 minutes the well caught fire again. At last reports it was still burning. Gulf 1 Delta Securities, 1-19-20e, La Fourche Parish, which found the cap rock to a new dome and lost returns at 1,374 ft., is setting casing, preparatory to going deeper. No. 2 in the same section is off the dome as it is drilling in hard shale at 5,175 ft.

LOUISIANA GULF COAST COMPLETIONS

Fields

Neale, Beauregard Parish: Tide Water Associated Rice Ld. & Lbr., 34-3S-11w, 291 bbl. through ¼-in. choke, T.P. 1,370 lb., C.P. 2,310 ft., perf. 11,015-35 ft., T.D. 11,804 ft.

Schooner Bayou, Vermilion Parish: Union of California 1 Vigneaux & Gastinel, 17-15s-1e, dry at 11,163 ft.

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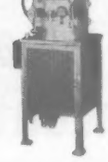

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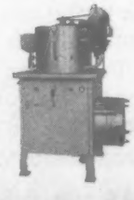

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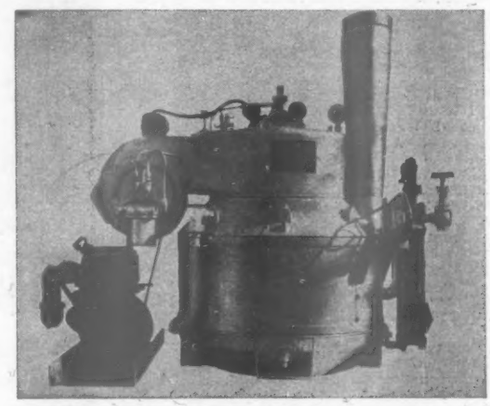

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Vinton, Plaquemines Parish: Tide Water Associated 19 Buras Levee dist., 23-21s-30e, 324 bbl. through 9/64-in. choke, T.P. 1,800 lb., gas-oil ratio 631:1, perf. 9,475-9,500 ft., T.D. 9,616 ft.

West Hackberry, Cameron Parish: Stanolind 1 Josephine Duhon, dry at 10,824 ft.

INDIANA, OHIO, KENTUCKY

Development Under Way in Heusler Extension Area

EVANSVILLE, Ind.—The Sells Petroleum Co. is drilling below 1,000 ft. on its 3 J. A. McCarty unit, about 2½ miles southwest of Evansville. Production in this area is from the Waltersburg sand at about 1,800 ft. Completed wells in the area to date have averaged from 50 to 100 bbl. daily on initial tests without shooting. The 2 J. A. McCarty unit, NE NE NW 32-6s-11w, was completed in the Waltersburg sand at 1,800-20 ft. for an initial production of 60 bbl. of oil a day. At present there are about five producing wells in the pool.

In addition to the 3 J. A. McCarty unit, George Nelson and the United Oil Co. are reported to have two operations under way in the area, the 2 Perry and Stader, NW SE NW 32-6s-11w, and the 2 Walling et al, NW NW NE 32-6s-11w. Eight additional reports have been issued for tests in the area and development is expected to continue without delay.

INDIANA COMPLETIONS

Decatur County: Public Service Co. of Indiana 233 Budenkamp, NW NE 22-9n-9e, 75,000 cu. ft. gas, Trenton 878 ft., T.D. 918 ft.

Public Service Co. of Indiana 235 Schoetter, SW SW 14-9n-9e, 142,000 cu. ft. gas, T.D. 920 ft.

Gibson County: McGinnis & Bitler 2 Michel, SW SE SE 26-1s-10w, dry, T.D. 1,850 ft., show oil 1,705 ft.

Elliott & Poe 1 Ford, approximately C N½ Don. 100-1s-10w, dry, T.D. 1,792 ft., Cypress 1,589 ft., McClosky 1,738 ft.

R. D. Brown 1 Morrow-Lehman, SW NE NE 36-1s-10w, dry T.D. 1,623 ft., Cypress 1,594 ft.

Harrison County: Harrison Development Co. 1 McGrain, NW SE 30-3s-4e, dry, T.D. 883 ft.

Jay County: H. Hanlin 3 Gladys, NW SE SW 24-24n-12e, pumped 10 bbl., T.D. 1,069 ft.

Posey County: John Lindos 1 Seifert, SW NW NE 30-6s-12w, pumped 30 bbl., Mansfield 1,152 ft.

Sullivan County: Burr Lambert 1 Hayden, NE NW 10-8n-10w, dry, T.D. 2,467 ft., Devonian 2,311 ft.

W. F. Sowers, SE NW NE 34-8n-10w, dry, T.D. 845 ft.

Vanderburg County: Sells Pet. 1 McCarthy, SW NE NW 32-6s-11w, pumped 50 bbl., natural, Waltersburg at T.D. 1,760 ft.

Sells Pet. 2 McCarthy, NE NE NW 32-6s-11w, pumped 70 bbl., natural, Waltersburg 1,813-22 ft., T.D.

Sells Pet. 2-A McCarthy, SE NW NW 32-6s-11w, pumped 38 bbl., natural, Waltersburg 1,754 ft., T.D. 1,774 ft.

OHIO

ZANESVILLE, Ohio.—Dibble & Miller 1 P. M. Parcell, a wildcat test in Section 36, northeast of Kenton, Jackson Township, Wyandot County, was a failure in the sub-Trenton horizons. Log of the well showed Clinton at 320-48 ft., top of Trenton at 1,345 ft., green sand at 1,932-70 ft., and total depth at 3,475 ft.

OHIO COMPLETIONS

Athens County, Carthage Township: C. A. Cody 1 E. McLeod, Sec. 26, 400,000 cu. ft. gas, sand 800 ft., T.D. 1,148 ft.

Ohio Fuel 1 G. Y. Tedrow, Sec. 23, dry, Berea, T.D. 1,665 ft.

Ohio Fuel 1 M. R. Secoy, Fraction 34, dry, Keener (water), T.D. 1,291 ft.

Coshocton County, Tiverton Township: Ohio Fuel 1 J. J. Hyatt, Sec. 8, dry, Clinton, T.D. 3,392 ft.

Holmes County, Monroe Township: Ohio Fuel 1 Ward Finney, Lot 15, 200,000 cu. ft. gas, shot, Clinton, T.D. 3,400 ft.

Mechanic Township: Kenrow Co. 1 I. E. O'Hall, Sec. 22, dry, Clinton, T.D. 3,642 ft.

Washington Township: Ohio Fuel 1 D. P. Ebert, Sec. 32, dry, Clinton, T.D. 2,855 ft.

Knox County, Brown Township: Allen Willey et al 1 E. R. Griffin, Sec. 13, dry, Clinton, T.D. 2,728 ft.

Jackson Township: Joe Ake 2 M. Stricker, Sec. 4, 60,000 cu. ft. gas, Clinton, T.D. 3,110 ft.

Lawrence County, Aid Township: David Fox 1 E. Henderson, Sec. 4, dry, Clinton 3,123 ft.

Medina County, Hinckley Township: Ohio Fuel 1 Frank Vansa, Lot 24, 500,000 cu. ft. gas, shot, Clinton, T.D. 3,315 ft.

Ohio Fuel 1 Chas. Lyons, Lot 32, 2,000,000 cu. ft. gas, shot, Clinton, T.D. 3,580 ft.

Lafayette Township: Ohio Fuel 3 William Ruder, Lot 14, show gas, Clinton, plugged, T.D. 3,180 ft.

Meigs County, Rutland Township: Nolan Shuster 2 fee, Sec. 28, 210,000 cu. ft. gas, sand 800 ft., T.D. 885 ft. (old well deepened).

Salem Township: Bengel & Downie 2 Frank Gardner, Sec. 1, 200,000 cu. ft. gas, Maxon, T.D. 769 ft.

Muskingum County, Salt Creek Township: Ohio Fuel 1 S. R. Deal, Sec. 9, 17 bbl., shot, Medina, T.D. 4,236 ft.

Perry County, Clayton Township: Industrial Gas 4 T. C. Rhoades, Sec. 5, 40 bbl., shot, Clinton, T.D. 3,262 ft.

Thorn Township: Ohio Oil 2 G. Divan, Sec. 24, dry, Clinton, T.D. 3,055 ft.

Stark County, Pike Township: Natural Gas W. Va. 1 Walter Esaly, Sec. 28, 1,270,000 cu. ft. gas, shot, Clinton, T.D. 4,727 ft.

Washington County, Barlow Township: Healey et al 1 D. Martin, Sec. 5, 500,000 cu. ft. gas, Salt sand, T.D. 1,231 ft.

Wayne County, Chester Township: Ohio Fuel 1 R. W. Knox, Sec. 30, show gas, plugged, Clinton, T.D. 2,943 ft.

Wyandot County, Jackson Township: Dibble & Miller 1 P. M. Parcell, Sec. 36, dry, T.D. 3,475 ft.

KENTUCKY

ASHLAND, Ky.—With only one gas well reported completed in eastern Kentucky this week, drilling activities dropped to the lowest level in recent weeks. A number of wells are near the completion state, and in two others the operators are fishing for tools. Four new locations were made, and one company reports plans for one or two new locations within the next few days.

Floyd County: Kentucky-West Virginia Gas Co. 5420, Lafayette Clark tract on Branham Creek, flowed 158,000 cu. ft. of gas after shot, T.D. 3,100 ft. in shale.

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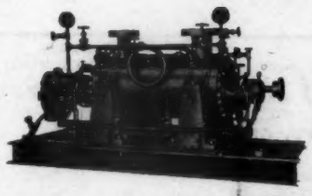
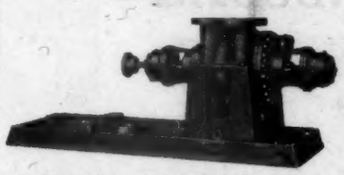
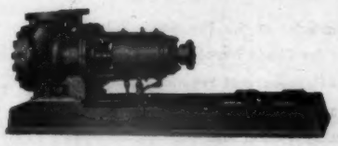


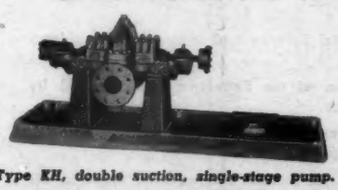
Type 1, hot oil, multi-stage, horizontal Centrifugal Pump.



Type OV, two-stage, hot oil pump.



Type SVMB, single-stage pump.



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ILLINOIS FIELD REPORT

New McClosky Field Opened In Edwards County

MATTOON, Ill.—The thirty-seventh oil pool to be discovered in Illinois this year was opened last week with the completion of Stanolind Oil & Gas Co. 1 Broster, SE SE NE 7-2s-10e. No. 1 Broster, a wildcat 7 miles southwest of Albion, Edwards County, was completed in the McClosky lime for 250 bbl. of oil daily. The McClosky was encountered at 3,418-21 ft. and 3,440-44 ft., and production is from perforations opposite the lime pay at 3,416-21 ft. The well was drilled to a total depth of 3,496 ft. and was plugged back to 3,460 ft. before acid treatment.

A new producing horizon was believed to have been added to the Blairsville, Hamilton County, when the Texas Co. found good saturation in the McClosky at the 1 D. S. Ledbetter, E½ NE NW 21-4s-7e, after coring a dry Aux Vases. In another Texas Co. test in the same area, the 2 S. Minton, E½ SW NW 21-4s-7e, saturation was found in both the Aux Vases and McClosky.

North of the South Maunie pool and about 6 miles southeast of Carmi, S. C. Yingling et al are drilling below 2,400 ft., looking for the Cypress sand in the 2 E. A. Myers, NE SE SW 12-6s-10e. The well showed saturated sand in the Tar Springs from 2,205-20 ft., and on a 45-minute drill-stem test, the pipe filled 2,100 ft. with fluid. However, the packer failed to hold and the drill-stem test was unsuccessful but from all indications it appears the well will make a good producer.

ILLINOIS COMPLETIONS

Wildcats

Clay County: Magnolia 1 Grahn, SW SE SE 35-5n-6e, dry at 2,866 ft.

Franklin County: E. S. Adkins 1 Brown, SE NE NW 25-7s-2e, dry at 2,138 ft., sand 2,095 ft.

Jasper County: W. W. Shaffer 1 Dial, NE SE 18-6n-10e, dry at 2,895 ft., McClosky 2,888 ft.

St. Clair County: Mid Sun Oil Co. 1 Schneipp, SW SW NW 5-1n-8w, dry at 2,001 ft., Aux Vases 415 ft., Trenton 1,840 ft.

Wabash County: Central P. L. 1 Summerville, NE SE SW 31-2n-14w, dry at 2,891 ft., Cypress 2,877 ft.

Wayne County: Pure 1 Walker, NE NE SW 26-1n-8e, pumped 70 bbl. oil and 122 bbl. water, McClosky 3,090-93 ft., 3,097-3,102 ft., T.D. 3,117 ft., *Mount Erie extension.*

N. V. Duncan 1 Jones, SW NW NW 9-1s-7e, pumped 178 bbl., Aux Vases 3,121-53 ft., 74-qt. shot 3,130-46 ft., T.D. 3,243 ft.

J. H. Hudson 1 Hilliard, W½ NW SW 34-1s-6e, dry at 3,255 ft., Aux Vases 3,094 ft., Ste. Genevieve 3,160 ft., McClosky 3,224 ft.

Fields

Albion, Edwards County: Magnolia 1 Fewkes, SE NE SE 12-2s-10e, pumped 159 bbl., 60-qt. shot 3,044-69 ft., Aux Vases 3,045 ft., T.D. 3,069 ft.

Allendale, Wabash County: Magnolia 7 Payne, NW NE SE 8-1n-12w, pumped 46 bbl., 45-qt. shot 1,515 ft., Biehl sand 1,523-34 ft., T.D. 1,534 ft.

Benton, Franklin County: E. S. Adkins 3-M Orient Coal, NW 31-6s-3e, pumped 61 bbl., 20-qt. shot, Tar Springs 2,114 ft., T.D. 2,131 ft.

E. S. Adkins 3-E C. W. F. Coal Co., NW NE SE 35-6s-2e, pumped 57 bbl., Tar Springs 2,112 ft., T.D. 2,152 ft.

Bible Grove, Clay County: Pure 4 Nodler, SE SE SW 4-5n-7e, pumped 80 bbl., Cypress 2,495-2,518 ft., T.D. 2,524 ft.

Bluford, Jefferson County: Kewanee Oil 1 Rufus, N½ SW SE 26-2s-4e, pumped 75 bbl., McClosky 3,048-65 ft., T.D. 3,073 ft.

North Boos, Jasper County: Healt Oil 1 Dees, SW NW 20-6n-10e, flowed 1,140 bbl., 1,000 gal. acid, McClosky 2,842-53 ft., T.D. 2,860 ft.

Clay City, Wayne County: Pure 1 Webster, SW NW 14-1n-8e, pumped 260 bbl., McClosky 3,065-68 ft., T.D. 3,080 ft.

Covington, Wayne County: Deep Rock 1 Cravens, E½ SW SE 30-1s-7e, flowed 1,978 bbl., 3,000 gal. acid, McClosky 3,221-42 ft., T.D. 3,242 ft.

Dale, Hamilton County: Pure 1 Fairweather, NW SE NW 8-6s-7e, pumped 99 bbl., 30-qt. shot 3,114 ft., Aux Vases 3,014-23 ft., T.D. 3,027 ft.

Shell 8 Beagle, SE SW SW 5-6s-7e, flowed 723 bbl., Aux Vases 2,993-3,016 ft., 25-qt., shot 3,019 ft., T.D. 3,037 ft.

Texas 2 Irvin, SE NE SW 12-6s-6e, pumped 91 bbl., 30-qt. shot 3,050-65 ft., Aux Vases 3,042-58 ft., T.D. 3,066 ft.

Carter 2 Short, SE SE SW 12-6s-6e, dry at 3,006 ft., Aux Vases 3,074 ft.

Shell and Pure 4 Rawls, SE SW NW 12-6s-6e, pumped 12 bbl., Aux Vases 3,042 ft., T.D. 3,062 ft.

Texas 6 McDonald, W½ SW NE 11-6s-6e, gas input well, T.D. 3,076 ft.

Dundas, Jasper County: Pure 4-B Dickerson, NW 20-5n-10e, pumped 35 bbl., natural, sand 2,484-90 ft., T.D. 2,500 ft.

Geff, Wayne County: Pure 3-A Blackburn, SW SE NW 13-1s-7e, dry at 3,255 ft., Aux Vases 3,077 ft., Fredonia 3,183 ft.

Pure 2-A Blackburn, NE SE NW 13-1s-7e, pumped 17 bbl., Aux Vases 3,078-3,100 ft., T.D. 3,128 ft.

Irvington, Washington County: Magnolia 3 Holling, SE SW NE 15-1s-1w, pumped 59 bbl., Benoist 1,530-35 ft., 10 qt. shot 1,531 ft., T.D. 1,535 ft.

Keensburg, Wabash County: Trans Tex 3-C Mussett, NW SW NW 29-2s-13w, pumped 30 bbl., 30-qt. shot 2,453 ft., Cypress sand 2,453-72 ft., T.D. 2,475 ft.

Louden, Fayette County: Carter 1 Sloan-Phillips, SE SW SE 34-9n-3e, dry at 1,641 ft., Benoist 1,631 ft.

New Harmony, White County: Ivan White 2 Lomas, SE NW SW 14-4s-14w, pumped 305 bbl., sand 2,220-39 ft., 40-qt. shot 2,225-40 ft., T.D. 2,241 ft.

Parkersburg, Richland County: Bonnas Development 1 Ahlfield, W¼ NE SE 21-2n-14w, dry at 3,104 ft., McClosky 3,078 ft.

Roland, White County: Kingwood-Sinclair 2-A Hale, SE NW SW 1-7s-8e, pumped 268 bbl., Waltersburg 2,219 ft., T.D. 2,238 ft.

Rural Hill, Hamilton County: Shell 6-A Smith, NE NE SE 13-6s-5e, dry at 3,186 ft., Aux Vases 3,171 ft., Ste. Genevieve 3,183 ft.

Magnolia 4 Hamilton, SW NE SW 24-6s-5e, flowed 520 bbl., Aux Vases 3,099-3,114 ft., 20-qt. shot 3,101 ft., T.D. 3,116 ft.

St. Jacob, Madison County: Sinclair-Wyoming 3 Ellis, SW NE NW 27-3n-6w, swabbed 130 bbl., Trenton 2,339 ft., 2,000 gal. acid, T.D. 2,359 ft.

St. Francesville, Lawrence County: Sinclair 8 All States, SE SW NE 22-2n-11w, pumped 40 bbl., Benoist 1,748 ft., T.D. 1,773 ft.

South Lawrence, Lawrence County: J. S. Young 1 O'Donnell, NW NE NE 26-2s-12w, pumped 40 bbl., Biehl 1,398-1 401 ft., T.D. 1,401 ft.

South Mason, Effingham County: Jarvis Bros. 2 Boyce, NE SW NE 34-6n-5e, pumped 40 bbl., Benoist 2,240 ft., T.D. 2,261 ft.

South Maunie, White County: Magnolia 14 Sisson-Higgins, SW NE SE 24-6s-10e, pumped 80 bbl., sand 2,252-74 ft., 60-qt. shot 2,267-74 ft., T.D. 2,282 ft.

Storms, White County: P. O. Wall 2 Brawlet, SW SW SE 10-6s-9e, dry at 2,956 ft., Cypress sand 2,687 ft., Benoist 2,843 ft., Aux Vases 2,931 ft.

Walpole, Hamilton County: Nash Redwine 2 Irvin, E½ NE NW 35-6s-6e, dry at 3,244 ft., Rosiclare 3,168 ft., Fredonia 3,210 ft.

Woodlawn, Jefferson County: Ruwalt & Bover 5 Winesburgh, SW SW SE 35-2s-1e, dry at 1,200 ft.

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The Oil and Gas Journal, Tulsa

MICHIGAN OPERATIONS

Michigan Oil Production May Show Increase This Month

By OTTO C. PRESSPRICH

SAGINAW, Mich.—Prospects are that Michigan will meet its federal oil-production quota this month for the first time since last spring. The quota for this month, 64,500 bbl. a day, has been continued for November by Harold L. Ickes, federal petroleum coordinator, and P. J. Hoffmaster, state supervisor of wells, estimates the production in November may exceed the quota slightly, despite the steel-pipe shortage which is decreasing drilling operations.

Prospects for Michigan production this year appear to be the best since 1939. The Oil and Gas Association of Michigan reports September production was 1,893,000 bbl. compared with 1,989,000 bbl. in August. Production for the first 9 months this year total 16,097,000 bbl., almost as much as was produced in all of 1941. At the current rate, 1942 production is expected to total 21,500,000 bbl., or about 2,000,000 bbl. short of the all-time record set in 1939.

Drilling activities last week resulted in 11 completions, bringing in three new oil wells and two gas producers. Most of the six dry holes were wildcat tests and best of the new producers was a Sun Oil Co. well in the Reed City field which produced 260 bbl. the first 15 hours after treatment with acid. Also a good well was Pure Oil Co. 3 Trubell in Section 3, Franklin Township, Clare County, where after-acid production was 290 bbl. a day on choke.

MICHIGAN COMPLETIONS

Allegan County, Dorr Township: Muskegon Oil Co. 1 Bala-Grzeszak, comm., C W½ NW SE 33-4n-12w, wildcat, dry, T.D. 1,604 ft.

Leighton Township: Jacob Bolema 1 Thaler, SW NW SE 11-4n-11w, wildcat, dry, T.D. 1,951 ft.

Arenac County, Adams Township: Ervin Major 1 Klein, C NE SE 25-19n-3e, dry, T.D. 4,675 ft.

Deep River Township: Ervin Major 1 Varadi, C SW SW 30-19n-4e, location abandoned.

Clare County, Franklin Township: Pure Oil Co. 3 Truebell, C N½ SW SW 3-20n-3w, 290 bbl., acidized, on choke, T.D. 3,317 ft.

Winterfield Township: Taggart Brothers Co. 107 Sample, Palmer, Merrill School, C SE 32-20n-6w, 4,740,000 cu. ft. gas, T.D. 1,302 ft.

Isabella County, Broomfield Township: L. & S. Drilling Co. 1 Hein, NE SE SE 13-14n-6w, 464,000 cu. ft. gas, T.D. 1,320 ft.

Mecosta County, Fork Township: Gulf Refining Co. 1 Compson, C S½ SE NE 6-16n-7w, dry, T.D. 3,866 ft.

Osceola County, Lincoln Township: Ohio Oil Co. 2 Moore, C S½ NW SE 18-18n-10w, dry, T.D. 3,094 ft.

Osceola Township: Sun Oil Co. 1 Stein-Wilcox comm., C N½ SW NE 32-18n-8w, 260 bbl. first 15 hr., acidized, T.D. 3,737 ft.

Sun Oil Co. 3 Wirth, C N½ NE SW Sec. 32, dry, T.D. 4,110 ft.

Van Buren County, Bloomingdale Township: James H. Conant 1 Banks, SE SW SE 11-1s-14w, pumping 40 bbl., acidized, and some salt water, T.D. 1,290 ft.

Columbia Township: R. Deem 1 Jung, SE NE NW 18-1s-15w, wildcat, dry, T.D. 1,156 ft.

California Fields

(Continued from Page 84)

to a substantial accumulation the oil and gas were absent. It is interesting to note also that some Miocene production was developed at the extreme eastern end of the Montebello structure several years ago but this zone was prevented from extending up into the older section of the Montebello field by a fault that definitely restricted the zone.

LOS ANGELES BASIN COMPLETIONS

Seal Beach, Orange County: Continental Oil Co. 5 Bixby, 11-5s-12w, recompleted pumping 112 bbl., 24.9-gravity, 10 per cent cut, T.D. 5,105 ft., perf. 5,041-5,105 ft., plugged original hole back from 5,715 ft. to 1,549 ft., and redrilled to Selover zone at 5,105 ft.

Wilmington, Los Angeles County: Long Beach Oil Development Co. 36-W Harbor, 9-5s-13w, flowed 10 bbl., 15.1-gravity, 10 per cent cut, 2?,000 cu ft. gas, 26/64-in. bean, flow pressure 430 lb., T.D. 3,542 ft., perf. 3,276-3,537 ft., completed in Ranger zone of Pliocene age.

Texas Co. 4 Refinery fee, 34-4s-13w, pumped 5 bbl., 17.1-gravity, 1 per cent cut, T.D. 3,395 ft. gun perf. 3,267-3,389 ft., completed in Ranger zone of Pliocene age.

Yorba Linda, Orange County: Shell Oil Co., Inc., 46-16 Olinda fee, 16-3s-19w, flowed 351 bbl., 18.6 gravity, 0.8 per cent cut, 58,000 cu. ft. gas, 30/64-in. bean, pressures 150/300 lb., T.D. 2,448 ft., perf. 2,181-2,310 ft., 2,371-2,443 ft., completed in Olinda F zone of Pliocene age.

Permian Basin-Panhandle

(Continued from Page 86)

TEXAS PANHANDLE COMPLETIONS

Fields

Gray County: LeFors Pet. Co. 2 West-Bull, pumped 25 bbl. oil and 25 bbl. water, 410-qt. shot, P.B. 2,850 ft., T.D. 3,208 ft.

Hutchinson County: J. M. Huber 2 Mayfield, flowed 98 bbl. in 1 hour on gas lift, T.D. 3,270 ft.

John Turner 1 E. Cockrell A, 120-qt. shot 3,020-60 ft., pumped 10 bbl., T.D. 3,060 ft.

SOUTHEAST NEW MEXICO COMPLETIONS

Wildcat, Lea County, 10 mi. E of Lovington: George P. Livermore 1 Maxwell-State, 26-15-34e, dry, T.D. 6,085 ft. in lime.

Jackson, Eddy County: Danciger Oil & Ref. 8-B Turner, 20-17-31e, flowed 240 bbl. natural, pay 3,424-34 ft., T.D.

Danciger Oil & Ref. 9-B Turner, 20-17-31e, flowed 140 bbl. natural, pay 3,474-85 ft., T.D.

Salt Lake, Lea County: Continental 3-7 Brooks, 7-20-33e, pumped 99 bbl. natural, pay 2,975 ft., T.D. 3,025 ft.

Square Lake, Eddy County: Continental 3-36 State, 36-16-30e, flowed 60 bbl. in 17 hr. natural, pay 2,960 ft., T.D. 3,025 ft.

McDannald & Williams 2 Grier, 30-16-31e, flowed 60 bbl., pay 3,040 ft., T.D. 3,141 ft.

Farm Bureau Project Waits For Federal Permission

Farm Bureau Oil Co. is waiting for a federal permit before laying a line from the Smith Mills pool, Henderson County, Kentucky, for which right-of-way has been purchased to the Ohio River.

OKLAHOMA FIELD REPORT

Wilcox Well Extends Liberty Field 1 Mile North

By CARL HOOT

THE Liberty pool of Noble County was apparently headed for a new start after a run of bad luck. A mile north of the discovery well, Deep Rock Oil Corp. 1 Dailey, NE NW NE 10-22n-2e, had Simpson dolomite at 4,360 ft., Wilcox sand at 4,369-71 ft., total depth, and on a 6-hour test flowed 450 bbl. of 45-gravity oil before being shut in for tanks. The Liberty pool was discovered in June by Deep Rock 1 Schultz, NW SW SE 9-22n-2e, which made a prolific flow from the second Wilcox at 4,508 ft. However, a number of 40-acre offsets have been abandoned after finding water in the sand. Two of the dry holes were plugged back to make producers from the Perry sand at 2,374 ft.

Pauls Valley Extended

In Garvin County the Pauls Valley pool had one well completed last week and another showing. Texas Co. 1 Patchell Community, SW NE SE 25-4n-1w, flowed 16 bbl. of oil an hour through ½-in. choke on tubing in Wilcox sand at 4,045-94 ft. The well extended the northwest trend another quarter mile. Offsetting this well to the west, Ohio Oil Co. 1-A Huckaby, SE NW SE Section 25, made a flow of oil after cleaning out in sand at 4,019-66 ft. It was shut in for storage with no report on the amount of the flow.

OKLAHOMA COMPLETIONS

Wildcat, Creek County: Carter Oil 1 Riopetoe, NW NW SE 24-14n-7e, dry, T.D. 4,165 ft., Bartlesville 3,160 ft., Wilcox 4,104 ft.

Brooksville, Pottawatomie County: Cities Service and Atlantic 2 Cade, SW NW 3-8n-3e, pumped 60 bbl., Hunton 4,900-16 ft., T.D. 4,960 ft.

Cumberland, Marshall County: Pure Oil 3 Little-109, SE SW NE 20-5s-7e, flowed 1,392 bbl., Oil Creek 5,858 ft., T.D. 5,968 ft.

Hewitt, West, Carter County: Dixon-Lausen 9 Woodworth, NE NW NW 20-4s-2w (shut down since last year), dry, T.D. 2,200 ft. in sand.

Neustadt 6 Choate-160, NW SE SE 18-4s-2w, dry, T.D. 2,280 ft., show oil in sand 2,195 ft.

Neustadt 8 Choate-160, SW NE SE 18-4s-2w, dry, T.D. 2,271 ft.

Neustadt 9 Choate-160, SW NE SE 18-4s-2w, dry, T.D. 2,267 ft.

Neustadt 11 Choate-160, NW NE SE 18-4s-2w, dry, T.D. 2,280 ft.

Neustadt 12 Choate-160, SE NE SE 18-4s-2w, dry, T.D. 2,229 ft.

Oklahoma City, Oklahoma County: Clark Oil & Gas 1 Warren, W½ NW SW 18-11n-2w, dry, T.D. 4,152 ft., sand 3,060 ft., 3,118 ft., Cromwell 3,924 ft., swabbed some oil, mostly water.

Otoe City, Noble County: Wrightsman & Myer 1 Yahn, W½ SW NE 18-22n-1e, dry, T.D. 3,387 ft., Layton 3,360 ft.

Wewoka, East, Seminole County: Jordan Pet. 1 Cox, N¼ SW NW 16-8n-8e, flowed 406 bbl., Misener 3,956-64 ft., T.D. 4,275 ft.

Miscellaneous

Creek County: Keener Oil & Gas 1 Smith, NW NE SE 13-14n-10e, dry, T.D. 2,595 ft.

Osage County: Sinclair Prairie 63, NW SW NW 20-23n-12e, pumped 20 bbl., Bartlesville 1,632-1,759 ft.

Seminole County: Fred McDuff 1 Lincoln, SE NW NW 34-9n-6e, dry, T.D. 4,252 ft., Wilcox 4,238 ft., Viola 4,155 ft.

Rocky Mountain Area

(Continued from Page 90)

944 ft., Bowdoin 708-58 ft., Phillips 898-943 ft., 1,030,000 cu. ft. gas.

Cedar Creek, Fallon County: Montana-Dakota 176, C NW 25-6n-60e, T.D. 932 ft. in Judith River, sand 803-32 ft., 400,000 cu. ft. gas.

Montana-Dakota 177, C SW 26-6n-60e, T.D. 906 ft., sand 775-875 ft., 416,000 cu. ft. gas.

Montana-Dakota 175, C NE 15-6n-60e, T.D. 990 ft., sand 875-980 ft., 590,000 cu. ft. gas.

Cut Bank, Glacier County: Emerson Prod. Co. 2 Tribal-209, SW NE NE 25-33n-6w, T.D. 3,040 ft., show of oil in Sunburst 2,967-90 ft., Cut Bank 3,002-32 ft., main pay 3,020-32 ft., swabbed 85 bbl. in 24 hr. after shot.

Half Moon, Flathead County: R. C. Tarrant 1 McPherters, CEL SE SE 25-20n-21w, T.D. 870 ft. in glacial drift, dry.

WYOMING COMPLETIONS

Circle Ridge, Fremont County: Continental 3 Shoshone-309, SW SW NW 6-6n-2w, T.D. 310 ft., bailed 10 bbl. an hr. from the Embar.

Garland, Big Horn County Van Etta Oil Co. 1 Howell, NW SE NE 32-56n-97w, dry, 2,718 ft.

Lance Creek, Niobrara County: Continental 6 Apex-2, SW NW SE 34-36n-65w, T.D. 4,210 ft., swabbed 61 bbl. fluid, 70 per cent water, in 10 hr.

Oregon Basin, Park County: Husky Ref. Co. 4 Neilson, NW NW NW 33-51n-100w, T.D. 3,544 ft., Embar 3,514 ft., pumped 140 bbl.

North Central Texas Fields

(Continued from Page 87)

lime pay 5,450-90 ft., acidized 4,000 gal., flowed 243 bbl., T.D. 5,490 ft.

Burkburnett, Wichita County: Akin & Dimock 5 E. E. Hardin, O. Farish Sur., A-383, dry, T.D. 1,367 ft.

K.M.A.-Ellenburger: Fain-McGaha Oil Corp. 3-E E. P. Griffin C, Lot 6, W. H. Spillers Sur., A-257, pay 4,351 ft., flowed 725 bbl., T.D. 4,390 ft.

Iowa Park: Hanlon-Buchanan, Inc., 16 AA T. L. Burnett et al A, Sec. 34, H.&G.N. Sur., A-435, oil sand 882-86 ft., flowed 12 bbl., T.D. 886 ft.

Olney, Young County: W. R. Worthington 2 Marietta Killian, Sec. 211, T.E.&L. Sur., dry, T.D. 962 ft.

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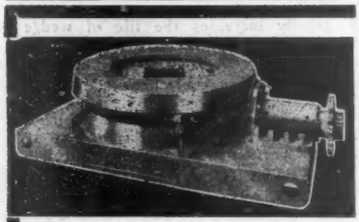

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BUY WAR SAVINGS BONDS

Among the Drilling

ARROW Drilling Co., Houston, Tex., recently completed a dry hole for British American Oil Co. at Cary, Sharkey County, Mississippi, and is below 6,800 ft. in a deep test being drilled by Fifteen Oil Co. in the Charenton field, St. Mary Parish, Louisiana.

BREWSTER-BARTLE Drilling Co., Houston, Tex., has started work on Navarro Oil Co. 1 Wilberts in the Bayou Blue field, Iberville Parish, Louisiana, and has recently completed Ohio Oil Co. 1 McDonald, a producer in the North Bay City field, Matagorda County, Texas. The company is also reworking several wells in the Pierce Junction field, Harris County, Texas, for Rio Bravo Oil Co.

C. I. Drilling Co., Houston, Tex., has rigs running at C. I. Production Co., Inc., and Kirby Petroleum Co. 1 Samuel Hayes in the Pine Prairie field, Evangeline Parish, Louisiana, and William Helis 1 Armelise Planting Co., on the Napoleonville dome, Assumption Parish.

LON H. CRON, Houston, Tex., is drilling for Continental Oil Co. in the Driscoll field, Duval County, Texas. Lon H. Cron and E. J. Gracey are below 6,000 ft. in Herbert and Smith 1 Conger at Nome, Jefferson County, Texas.

SOUTHERN Drilling & Well Service Co., Houston, Tex., is moving rigs in for Pan American Production Co. 1 Vinyard, and Danciger Oil & Refining Co. 1 Gary, both at Boling, Wharton County, Texas. The company has also set surface pipe in Carpenter-Smith 1 Eberts at Sour Lake, Hardin County, Texas.

HARRY L. EDWARDS Drilling Co. has recently completed Mid-States 1 Stewart in the Gillock field, Galveston County, Texas. The company is starting work on a well on the Garland lease in the Port Barre field, St. Landry Parish, Louisiana, for Pan American Production Co., and has a rig running in the Mayo field, Jackson County, Texas, for the same company.

FAIN Drilling Co., Houston, Tex., has several rigs running in the different coastal districts including three for Continental Oil Co., two in the Rincon field, Starr County, Texas, and the other in the South Caesar field, Bee County, Texas. The company is also drilling 1 Rydolph in the Bloomington area, Victoria County, Texas, for United Gas Co. In partnership with Continental and Atlantic, the company is drilling 1 Pettus, a Wilcox test in Goliad County, and on its own account is drilling 1 Mary Ann Richman, a wildcat on a Stanolind farm-out in Matagorda County, Texas. It has recently completed a dry hole at 1 Hattie Baldwin, a 10,000-ft. wildcat in San Jacinto County, Texas.

FALCON-SEABOARD Drilling Co., Houston, Tex., is drilling Gulf 1 Frank Miller, a wildcat 7 miles south of Homer, Claiborne Parish, Louisiana.

GILGER Drilling Co. has spudded Grubb and Hawkins 2 Cass fee, in the Kildare extension to the Rodessa field in Cass County, Texas. In a wildcat near Latex, Caddo Parish, Louisiana, Roy Fisher et al 1 Scott, is below 4,800 ft. and scheduled to go to 6,200 ft.

GREY WOLF Drilling Co., Houston, Tex., is preparing to spud Pan American Production Co. 1 M. J. Chandless, a wildcat near Madisonville, Madison County, Texas. The company also has three rigs running for La Gloria Corp., two in the La Gloria field, Jim Wells County, Texas, and the third on an 11,300-ft. wildcat in the Pinehurst area, near Lake Creek, Montgomery County, Texas.

PARKER Drilling Co., drilling Amerada Petroleum Co. 1 Lewis House, in C SE NW 2-1n-3w, north of the old Robberson pool in the southwest corner of Garvin County, Oklahoma, was drilling below 3,550 ft.

J. T. O'NEAL, Lubbock, Tex., has the contract for South Basin Oil Co. 1 Good, a wildcat in NE NE 5-4n-20e, in De Baca County, New Mexico. The test has been started and contract is for 6,000 ft.

J. FRED COSTELLE, drilling contractor of Odessa, Tex., was moving in rotary-rig materials for a scheduled 8,500-ft. wildcat to be drilled for Ohio Oil Co. in northeastern Sterling County, Texas, on the ranch of L. T. Clark and son. Location is 1,980 ft. from the south and west lines of Section 6, Block A, R. R. Wade Survey, 10 miles west of Water Valley.

EARL WAKEFIELD, drilling contractor of Wichita, Kans., was underreaming pipe at 1,950 ft. on the O. E. Sutter, Eben W. Pyle and Wolf Creek Oil Co. 1 Hawley, in C SW SE 9-35s-4e, Cowley County, Kansas.

FAIN Drilling Co. is drilling Continental Oil Co. 1 Etheridge, on the west flank of the Oklahoma City Wilcox structure on the north end, and just east of the Santa Fe tracks. Fain is also drilling another test for Continental in this area.

E. C. JOHNSTON has the drilling contract for the Pettit lime on Robert A. Stacy 1 Roy Smith, in SW 4-23n-8w, the Haynesville pool, Claiborne Parish, Louisiana. Test was starting last week.

H. M. WILLIAMS, drilling contractor of Wichita, Kans., drilling H. M. Williams 1 Krehbiel, a wildcat in C SE SE 10-26s-7w, Reno County, Kansas, was at 2,300 ft. Saturday. The well will go to the Arbuckle, which is expected at approximately 4,300 ft.

RUSO Drilling Co., Tulsa, was setting surface pipe on Globe Oil & Refining Co. 1 Anderson, in C SW SW SW 22-17s-3w, McPherson County, Kansas. The well will test the Simpson, around 3,500 ft.

OLSON Drilling Co. has been awarded the contract to drill Anderson-Prichard Oil Corp. 1 Reed, located in C NW SW Section 8, Block 30, W.&N.M. Survey, Sterling County, Texas. The contract is to 9,000 ft. or the Ellenburger.

GEORGE LIVERMORE, drilling contractor of Lubbock, Tex., had set surface casing and cemented at 261 ft. on L. A. Helms 1 Harris, a wildcat in Section 103, Block M-10, B.S. &F. Survey, Swisher County, Texas. The test is considered an important one for that area of the South Plains. Contract calls for a 5,500-ft. test. Sinclair Prairie is supporting the test.

ED SWEARER and Falcon-Seaboard Drilling Co. are the contractors on Lario Oil & Gas Co. 1 Hoffman, in C W½ NE SW 25-17s-4w, a McPherson County, Kansas, wildcat, 1½ miles southwest of the Lindsborg pool. The Viola lime was topped at 3,402 ft. and cored from 3,405 to 3,410 ft.

W. B. OMOHUNDRO, drilling contractor of Wichita Falls, Tex., has been awarded the contract to drill

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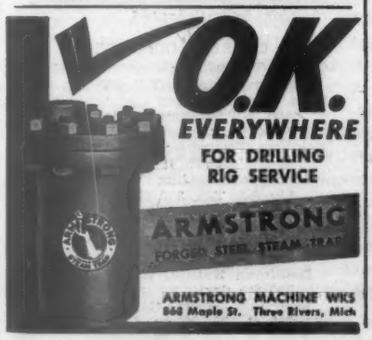

a wildcat in Montague County, Texas, for L. S. Youngblood of Oklahoma City, and R. L. Foree, of Fort Worth. The well is the 1 Joe Benton, in the Abel L. Lewis Survey A-420, 3½ miles north of Stoneburg. Contract is for 6,500 ft. or the Ellenburger.

E. V. HILLIARD has the contract to drill Daily Crude Oil Co. 2 Fred Schuett, in C W½ NW SW 28-20n-6w, Clare County, Michigan.

●

Association Seeks Clarification Of Presidential Order 9240

Despite efforts on the part of the American Association of Oilwell Drilling Contractors to determine what effect presidential Order 9240 will have on drilling contractors, nothing has developed that would throw any light on the Department of Labor's policy toward the drilling industry. Drilling contractors have generally felt that they were not affected by the order, since either by contract or custom their employes receive overtime compensation after 40 hours each week at the rate of time and one-half, and Sunday is regarded as any other day.

This presidential order states that when work is actually performed on any 7 days, double time must be paid for the work on the seventh day, unless by agreement the employer and employe have arranged a mutually satisfactory work schedule which affords a day of rest in each regular work week. The order applies to "all work relating to the prosecution of the war," including all work performed by the prime contractor on government war contracts, by their subcontractors, and those who make the materials and supplies necessary for the performance of such contracts and subcontracts. The association has pointed out that drilling contractors have no contracts with the Government, and do no direct work for the Government. It is hoped that clarification will be forthcoming soon.

●

A.A.O.D.C. to Hold Second Annual Meeting in Tulsa

The American Association of Oilwell Drilling Contractors will hold its second annual meeting in Tulsa, November 19-20. Brad Mills, executive secretary of the association, was in Tulsa last week making the arrangements.

Mr. Mills said that the association has been trying to show cause why the drilling contractor should not be placed under the general maximum price regulation. He reported that the association has been advised that the Washington office of the Office of Price Administration has in preparation an exception to the order that will exempt the drilling contractor from its provisions. It is hoped that the OPA will understand the driller's position and will grant the relief necessary to permit the drilling industry to function normally.

●

Varieties of Wire Rope May Be Cut One-Third

WASHINGTON, D. C.—A proposed simplified-practice recommendation for wire rope which promises large savings in war materials has just been submitted to producers, distributors, users and others interested for approval or comment by the National Bureau of Standards.

The proposal was developed by the contact committee of the Wire Rope and Strand Manufacturers Association and submitted for passage through the regular procedure of the Division of Simplified Practice of the Bureau of Standards at the request of the Wire and Wire-Products Section, Iron and Steel Branch, War Production Board.

It includes sizes, constructions, grades and breaking strengths of the vast majority of tonnage of wire rope and is based on an exhaustive analytical review of existing published standards of the industry. The recommendation is designed to conserve strategic materials and available productive capacity for the war program and at the same time adequately care for important consumer requirements.

General adherence to the 20 tables shown in the recommendation will result in a net reduction in variety from 973 items to 643, or 33.9 per cent. The major production and use of wire rope and, therefore, the predominant tonnage is covered by four different rope constructions, where the reduction in variety proposed is from 352 items to 182, or 48 per cent.

Distributors and users of wire rope who are desirous of aiding the war program by conforming to this important conservation measure are invited to write to the Division of Simplified Practice, National Bureau of Standards, Washington, D. C., for mimeographed copies of the proposed recommendation.

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NORTH LOUISIANA, ARKANSAS

Two New Fields Opened In North Louisiana

SHREVEPORT, La.—Prospects are good for two new fields in North Louisiana and a third wildcat is preparing to test saturation. In Winn Parish, 14 miles west of Winnfield, H. L. Hunt F-24 Goodpine Lumber Co., 13-12n-5w, was drilled to 9,718 ft. and plugged back to 6,008 ft. After being shut in several days the well was opened up and made 2,100,000 cu. ft. of gas with 50 bbl. of water-white distillate per million cu. ft. through ¼-in. choke. It was estimated that the well would have made 30,000,000 cu. ft. on open flow. On a later test the tubing was found full of distillate. It is believed that this well will make between 15 and 20 bbl. of distillate per million cu. ft. on regular production. It is shut in awaiting official gage.

In La Salle Parish, 16 miles south of Jena, a new Wilcox pool is being added to the large list of new fields in that area by Carter and Phillips A-2 Tensas Delta Land Co., 25-6n-4e. The well flowed 185 bbl. of fluid through ¼-in. choke, 88 per cent being oil and the remainder brackish water. Tubing pressure was 300 lb. and shut-in casing pressure 925 lb. The well is shut in while storage is being installed.

H. L. Hunt is preparing to perforate and test an oil sand found in his A-2 Tensas Land Co., 8-4n-5e, 15 miles north of Marksville in Catahoula Parish. Top of the Wilcox was logged at 4,134 ft. and the well was bottomed, still in Wilcox at 7,159 ft. The oil sand was found at 5,406-16 ft.

Root and Murphy are preparing to test their 1 Root in Union County, Arkansas. The well was abandoned last September by Crescent Drilling Co. at 7,465 ft., but present operators are going back into the hole to perforate and test the Nacatoch at 2,090-2,120 ft. and 2,155-65 ft. In Calhoun County, Skelly Oil Co. has decided to start operations again in their 1 Calion Lumber Co., 27-15-14, which was temporarily abandoned at 3,515

(Continued on Page 101)

FOUR TESTED WAYS to make Brake Lining Last Longer

The suggestions given at the right are presented by Johns-Manville as proved methods of conserving drilling equipment, and of increasing the life and efficiency of brake linings.

1. **Check brake and clutch adjustment regularly . . .** to guard against unequal wear on friction materials.
2. **Don't box-in brakes and clutches . . .** Assure maximum heat dissipation by providing increased air flow.
3. **True up rims whenever scored or heat-checked,** to prevent unusually rapid wear of linings and facings.
4. **Don't try to control friction by using oil, clay or other such substances** on linings.

For further suggestions and for tips on how to secure longer life and higher efficiency from Packings, Insulations, Roofings and Refractory Cements, write for the new J-M Manual, "101 Suggested Good Operating Practices." Johns-Manville, 22 East 40th Street, New York, N.Y.

And for maximum efficiency, start rigs right* with

JM PRODUCTS

Johns-Manville 420 ROTARY LINING

*Write for Catalog FN-10A

CANADIAN FIELDS

Pouce Coupe Test Has Oil and Gas Showings

By VICTOR LAURISTON

CHATHAM, Ont.—Crude and natural-gasoline production from all Alberta fields for the week ending October 12 showed a substantial upturn, averaging 27,179 bbl. daily compared with 25,113 bbl. daily for the previous week, and close to the daily average of 27,474 bbl. for the corresponding week last year.

Turner Valley Completions

In North Turner Valley, Foothills Oil & Gas 9, LSD 14, 27-20-3w5, total depth 7,546 ft., after drilling 1,332 ft. of Madison limestone, was acidized with 5,000 gal. and flowed 1,458 bbl. daily initial production. This unusual thickness of lime has been encountered in several North Turner Valley tests, most of which proved good producers.

TURNER VALLEY LIME TESTS

North Turner Valley: Northwest-Hudson's Bay 9, LSD 10, 8-21-3w5, fishing at 7,870 ft., Madison 7,845 ft.
West Central section: Royalite Oil 65, LSD 16, 7-19-2w5, below 6,955 ft., Madison 6,692 ft.
Southwest field: Northwest-Hudson's Bay 8, LSD 2-3, 8-18-2w5, T.D. 8,645 ft., Madison 8,214 ft., acidizing and testing; this is the most southerly test yet finished in the limestone.

Pouce Coupe Test

In the northern foothills, west of Peace River, Guardian Oil 1, 7-80-12w6, bottoming around 7,000 ft., was testing production. The well got a lime formation, apparently the Madison, around 4,785 ft. and was reported in the Devonian at 6,280 ft. and in the Triassic at 6,641 ft. An oil show with 20,000 cu. ft. of gas and salt water was encountered in the Madison around 4,805 ft. and a later show around 5,459 ft. These would probably correspond to the upper and lower zones of the Madison in Turner Valley. Further shows were met in the deeper drilling.

Higher Oil Price Asked

In a submission to G. R. Cottrelle, federal oil controller, the Alberta Petroleum Association has urged that an increase in the price of Alberta crude be authorized with a view to encouraging further development work and maintaining production. Oil operators state that an increase would enable companies to drill out locations in proven areas and also help operators or small producers in the south end of the field to continue production. The present price of Turner Valley crude ranges from $1.43 to $1.97 per barrel.

A development which may change the entire outlook for the field is Devonian Test 1, LSD 2, 25-19-3w5, which is now preparing to drill through the Madison limestone and the Banff shales to test the underlying Devonian limestone. Location, west of the old South Turner Valley naphtha area, has been selected with a view to avoiding faulted conditions, and it is possible the Devonian will be reached and tested in a drilling depth not much greater than required to reach the dark lime horizon of the Madison in some recent North Turner Valley tests. If production is secured in the previously untested Devonian, it will open a new prospect for drilling, or for the deepening of well-located wells now producing from the Madison.

Morley Reserve Project

On the Stoney Indian Reserve near Morley, some 50 miles west of Calgary, Okalta Oils is preparing to deepen and complete the old Norcon Oils 1 as the first test of holdings of more than 15,000 acres. The well has been standing at 1,590 ft. since about 1930, with 13⅜-in. casing carried to 1,182 ft. and is in good shape for resumption, but owing to transportation difficulties, drilling may not be resumed until the freeze up permits the hauling of heavy equipment. The company's holdings include 9,895 acres from the Dominion Government and 5,597 acres secured from Hector Oils on a royalty basis. The structure, which is somewhat similar to Turner Valley, was reported on by Dr. Robin Willis and Russell V. Johnson, the latter making the original location. Structural conditions are somewhat similar to those of Turner Valley, except that the producing formations are expected to be considerably shallower.

Test at Aldersyde

An important test is in progress on the High River-Aldersyde structure, east of Turner Valley, where New Ranchmen's 1, LSD 16, 34-19-29w4, is deepening from 1,550 ft. after landing 16-in. casing. The drill is in the Paskapoo formation, with the Belly River expected around 2,800 ft., and the well has been logging closely with Ranchmen's 1 on the same structure which at 7,250 ft. was in the Dalhousie formation just above the Madison. The earlier test, which was handicapped by a small hole, secured numerous oil shows in formations above the Madison, but was not carried into the latter formation, where large production is anticipated.

ONTARIO COMPLETIONS

Caistor Township: Grimsby Gas Co., Lot 1, Concession 2, T.D. 585 ft., dry.
Lake Erie: Dominion Gas, opposite Lot 190, S.T.R. Romney Township, T.D. 1,350 ft., 76,000 cu. ft. gas.
Rainham Township: Stanley Estate, Lot 13-1, T.D. 895 ft., 50,000 cu. ft. gas.
Wainfleet Township: W. C. Patterson, Lot 8-3, T.D. 810 ft., dry.
W. C. Patterson, Lot 8-3, T.D. 800 ft., 20,000 cu. ft. gas.
Walpole Township: Dominion Natural Gas, Lot 9-7, T.D. 930 ft., dry.
Dominion Natural Gas, Lot 2-7, T.D. 950 ft., dry.
Dominion Natural Gas, Lot 13-10, T.D. 910 ft., 35,000 cu. ft. gas.

Personal Paragraphs

EDWARD M. BORGER, president, Peoples Natural Gas Co., Pittsburgh, Pa., has taken a leave of absence to join the American Red Cross Field Service as an ambulance driver abroad. JOHN J. JACOBS, executive assistant to Mr. Borger, has been elected a vice president and manager of the company, and J. FRENCH ROBINSON, a former president and now head of the East Ohio Gas Co., Cleveland, Ohio, has been elected a director. S. C. PRESTON, vice president since 1936, will continue in that capacity.

BILL SMITH, scout for Phillips Petroleum Co. for the past 5 years, leaves Shawnee, Okla., soon for the Navy. He will be succeeded by M. W. ENDICOTT, who is returning to the company to take over the duties.

JAMES D. BALL, Humble Oil & Refining Co. farm boss, has been transferred from the Government Wells district to the Kelsey district in Texas, as assistant district superintendent.

DON SCHUMAKER, for several years assistant to SAM BAIRD, chief scout of Mid-Continent Petroleum Corp., has resigned to join the scouting staff of Skelly Oil Co. He will be stationed in the Tulsa office.

REESE CLEVELAND, independent oil operator of Midland, Tex., who was recently called into the Army as a reserve officer, is now a first lieutenant, and is in charge of the public relations office at Fort Bliss, near El Paso, Tex.

T. A. DOCKWEILER and J. W. VAIDEN were recently elected to the board of directors of Skelly Oil Co. Mr. Vaiden is vice president in charge of the manufacturing division, and Mr. Dockweiler is an attorney of Los Angeles, Calif.

CLIFTON M. KEELER, until recently a consulting petroleum engineer and geologist in Oklahoma and Texas, has been appointed a member of the food administrator's staff in the West Indies. He is stationed at St. Thomas, Virgin Islands.

B. L. THORNE, past president of the Canadian Institute of Mining and Metallurgy, has been elected president of the Alberta Petroleum Association, to succeed HERBERT E. GREENFIELD. Other officers are: F. M. GRAHAM, vice president, and E. W. KOLB, secretary-treasurer.

DONALD H. WAID, of the legal department of Sun Oil Co., has been commissioned a lieutenant, junior grade, of the Naval Reserve, and has left Tulsa for active duty in the naval training school at Los Angeles, Calif. His work will be in the communications section.

DR. H. D. WILDE, manager of the technical and research department of Humble Oil & Refining Co., Houston, Tex., will be guest speaker at the Petroleum Club luncheon on November 2. His subject will be "Production of Synthetic Rubber." The address will be supplemented by slides.

WILLARD G. WIEGEL has been appointed personnel manager in the Lone Star Gas System, Dallas, Tex. He will have charge of the various activities relating to the company's employe personnel. He has been with the company since 1928, and in 1935 was appointed advertising manager in the advertising-public relations department.

Shifts: ORVILL HORTON, engineer, Phillips Petroleum Co., Phillips to Pampa, Tex.; J. L. HAMILTON, superintendent, Lone Star Gasoline Co., Grapeland to Murchison, Tex.; G. JARVIS, superintendent, United Production Co., Inc., Flora to Cisne, Ill.; I. B. LOYD, engineer, Texas Co., Bismarck to Minot, N. D.; A. J. ODEN, geologist, Magnolia Petroleum Co., Perry to Ardmore, Okla.; R. BUNCH, superintendent, Sun Oil Co., Fa'furrias to McAllen, Tex.; FRANK E. MARKWOOD, superintendent, Danciger Oil & Refining Co., Abilene, Tex., to Perry, Okla.; LYNN HICKS, engineer, Cities Service Oil Co., Odessa, Tex., to Bartlesville, Okla.; A. W. REA, superintendent, J. V. Dunbar, Farina to Benton, Ill.; LEO V. HORTON, engineer, Pyramid Petroleum Corp., Olney to Mount Vernon, Ill.

M. C. GIBLER, formerly Houston, Tex., division marketer in the sales division of Gulf Oil Corp., has been commissioned a lieutenant in the Navy, and sent to Quonset Point, R. I.

WILLIAM A. HUDSON, oil man of Fort Worth, Tex., has been commissioned a first lieutenant in the Ferry Command. He is stationed at Love Field, Dallas, Tex. He has been a civilian pilot in the Ferry Command for several months.

JOHN F. DODGE, professor of petroleum engineering at University of Southern California, addressed the Los Angeles Basin chapter of the division of production of the American Petroleum Institute, Tuesday night on "Conservation and Storage of Natural Gas."

KARL A. MYGDAL, geologist with Pure Oil Co. at Fort Worth, Tex., reviewed a book entitled "Oil in the Earth" at the weekly meeting of the Fort Worth Geological Society Monday evening. The book was written by WALLACE E. PRATT, of Standard Oil Co. of New Jersey.

G. F. OLSEN, manager of the laboratory department of General Petroleum Corp., Los Angeles, Calif., was the principal speaker at the last monthly meeting of the Petroleum Accountants Society of Los Angeles and discussed, "What the Future Holds for the Petroleum Industry."

ARTHUR M. ANDERSON, superintendent of Holly Oil & Development Co., of Huntington Beach, Calif., will probably rank up high when final returns are in for the scrap drive as his preliminary total was 150 tons with a probable 750 to 1,000 tons to be turned in to Mr. Anderson, who is chairman of the Oil Field Salvage Committee for Huntington Beach.

Do You Remember?

From The Oil and Gas Journal Files

40 YEARS AGO (1902)

The number of oil investment companies resulting from the Lucas strike at Beaumont is given by the Oil City (Pa.) Derrick as 1,578 in 1901, and their nominal capital stock at $669,083,000. There was $10 worth of capital stock for every barrel of oil produced in 1901.

Newspapers have recently printed dispatches from Tacoma, Wash., describing the bringing in of an oil gusher at the head of Controller Bay in the Kayack fields, Alaska.

Engineer in Chief George Melville has submitted to the Secretary of the Navy his report covering exhaustive experiments conducted by the engineering board for the purpose of determining the value of oil as fuel in the Navy, compared to coal.

25 YEARS AGO (1917)

Owing to the accidental death of Senator Husting, of Wisconsin, a strong opponent to proposed oil-land legislation in Congress is removed from earthly activities. It is understood he intended to conduct a filibuster against the legislation at the next Congressional term.

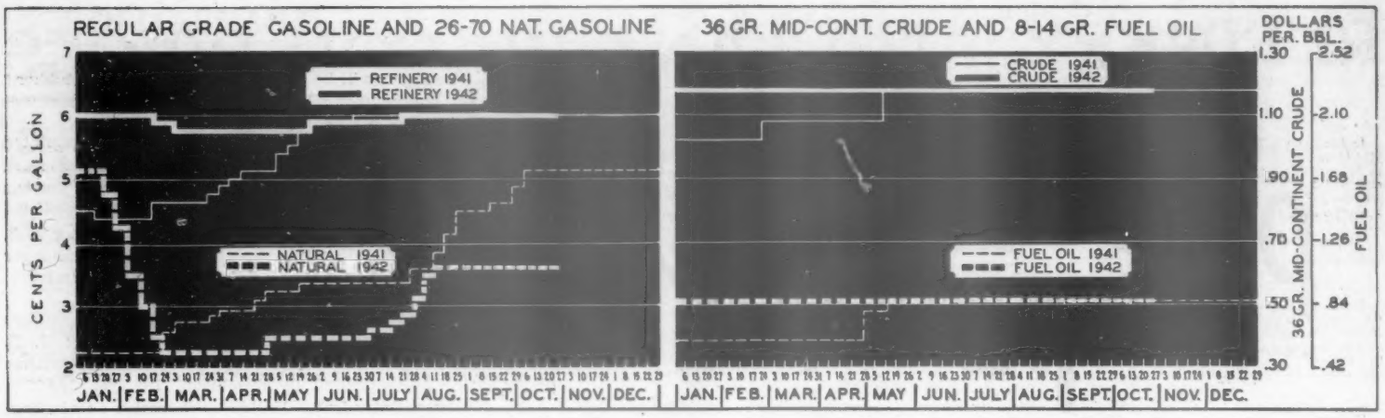
At Topeka, Kans., last week the state charter board approved the Carter Oil Co. capital stock increase from $50,000 to $4,360,810. This move by Carter indicates a large expansion in its development work in that state.

Subsidiaries of Ohio Cities Service Co. in Central Ohio have recently leased 160,000 acres of land to be developed for gas. The land lies south of Wooster and is in a solid block.

10 YEARS AGO (1932)

Three federal court judges delivered an opinion stating that the Texas Railroad Commission had exceeded its authority in issuing permanent proration orders for the East Texas field.

A special train for the exclusive use of delegates to the American Petroleum Institute convention in Houston, Tex., November 15-17, will be operated from Tulsa on a fast and convenient schedule.



MARKET DEVELOPMENTS . . .

East Coast

NEW YORK. — Failure to increase rail shipments of crude oil and refined products into the East Coast "shortage" area to anything like the expected average for October has tended to discount hopes that less severe rationing of fuel oil and gasoline, particularly the former, may be expected. Up to October 17, daily average tank-car shipments into District 1 averaged less than 800,000 bbl., which was 11.5 per cent less than anticipated average of 900,000 bbl. per day.

When its most recent report was submitted, the economics subcommittee of the PIWC estimated that "about 80 per cent of the fuel oil for heating in the East Coast" area could be supplied if there was "still more efficient use of tank cars." Since the results for the first half of October were less efficient than in September, it is apparent that the prospects for less severe rationing are now more remote. The inability to increase tank-car shipments during the current month also implies considerable doubt that the November goal of 950,000 bbl. per day will be reached.

A factor that is reported to be contributing to the weakness of the heating-oil statistical position is an improper balance in the products being shipped into the East. The proportion of gasoline is greater than it should be in relation to light fuel oil and will have to be revised so that a larger ratio of the latter will be delivered. According to some reports, gasoline shipments have even exceeded rationed requirements.

Mid-Continent

THE paradox of firm prices and strong demand in the face of imminent gasoline rationing throughout the country persisted this week. Much of the November business is now on the books of refiners and the volume represented by firm commitments is in keeping with the season and considering previous reductions in civilian requirements caused by voluntary curtailment.

Mid-Continent refiners reported no apparent variation in motor-fuel demand in prospect for November, except a normal retrenchment traceable to winter conditions. Shipments into agricultural and war manufacturing areas are particularly heavy.

East Coast jobbers and major distributors are purchasing for first-quarter of 1943 delivery and commitments to Mid-Continent refiners for advance business are being made on the basis of the going market at time of loading.

Both sellers and buyers are apparently content to accept vagaries of the market in order to assure an outlet and supply, whichever the case may be, over a period of 5 months. Forward selling is more in the nature of a trial balloon. Refiners are anxious to project their operating schedules on the strongest available indications of demand while buyers are apparently reasonably satisfied that their requirements will not change materially at least through the first 3 months of next year.

All grades of fuel oil are in strong demand throughout the Middle West and East Coast. Large consumers, particularly those in preferred positions such as railroads and war manufacturers, are bidding against one another for new supplies, although inducements held out to suppliers are strictly limited by price ceilings and restrictions on other methods of obligating refiners.

Demand for natural gasoline in the Oklahoma (Group 3) territory exceeds current production. Prices are strong and manufacturers can see no early prospect of softer conditions. The winter requirements for natural normally are mostly satisfied by the last of November.

SENTENCE SUMMARIES

MID-CONTINENT: Market steady for all products, particularly all grades of fuel oil. Refiners selling gasoline for East Coast delivery next year.

GULF COAST: Slight improvement noted in shipments to East Coast and in lend-lease loadings. Tank-car shortage governs trading.

PACIFIC COAST: Distress gasoline available in limited quantities. Buyers picking up all offerings of distillate fuels. Residual demand tapers off.

EAST COAST: Hopes diminished for modification of rationing restrictions. Fuel-oil stockpiling lags behind expectations.

PENNSYLVANIA: Refiners step up crude runs to stills. Neutral oils in strong demand. Other products in firm and unchanged position.

A.P.I. REFINERY REPORT

Week Ended October 17, 1942

(Figures in thousands of barrels)

	Dly. crude runs to stills	Stocks: Gasoline	Residual	Gas oil
Appalachian	164	2,633	540	723
Ind., Ill., Ky.	735	13,732	3,329	6,010
Okla., Kans., Mo.	355	6,429	1,356	1,866
Censored group*	1,861	38,011	18,553	24,953
Rockies	100	1,638	534	447
California	694	16,513	54,225	12,927
Total Oct. 17, 1942	3,709	78,956	78,537	46,926
Total Oct. 10, 1942	3,766	79,731	78,691	46,007
Total Oct. 18, 1941	4,131	81,623	94,800	54,143

Note: Refinery runs and stocks for week ended October 24, 1924, appear on Trends page.

*Reports combined on East Coast, Texas Gulf, Louisiana-Arkansas and Inland Texas at request of OPC.

CRUDE-OIL STOCKS

(Bureau of Mines Estimate)

Week ended:	Bbl. of crude*
October 17, 1942	238,119,000
October 10, 1942 (revised)	239,165,000
October 18, 1941	242,805,000

*Excludes heavy, unrefinable stocks in California.

Gulf Coast

HOUSTON, Tex. — Prices on 72-74 gasoline strengthened slightly last week with sales at 5.5 cents per gallon reported in buyers cars. Sellers who furnish cars are quoting the same product at 5.75 cents. The inland market, which has been holding at higher prices, has tended to weaken somewhat.

With lower grades of gasoline, kerosene and fuel oils selling at ceiling prices, jobbers are practically confined to government contracts. Government contract requirements are declining and there is fear of a continued slackening in activity when gasoline rationing becomes effective. Some more optimistic observers note an increase in lend-lease and other export trade and point out that Curacao and Aruba are unable to meet the demand being made on them and that deficiencies in the Netherlands West Indies must be made up by coastal refiners.

Transportation difficulties are increasing, at least temporarily, as tank-car movements from the area have declined. A growing number of cars are going to the shops for repairs and there is reason to believe that the steady grind at passenger-train speeds will accelerate the trend.

Pacific Coast

LOS ANGELES, Calif. — Gasoline is moving in limited quantities at the low of quotations. One small refinery that has been closed down for several months has resumed limited operation.

Fuel-oil prices continue firm but stocks appear to be building up temporarily. If accumulation continues, prices are bound to ease off slightly. The increase in fuel-oil stocks that has taken place during recent weeks is believed to be abnormal and reflects decreased liftings of marine stocks.

Diesel and gas oil continues in good demand and there is a ready market for all offerings. Marketers are storing as much as possible to be used as blending stock when needed.

Natural-gasoline prices have continued unchanged for several weeks with production in near balance with demand.

A little hot oil, produced in excess of the conservation quotas, is being run to California refineries but the petroleum coordinator will probably crack down on offenders in the near future.

REFINERY AND TANK-WAGON PRICES

(Prices as of October 27)

Refinery Gasoline

Octane (A.S.T.M.)	†80	78	74-76	72-74	68-70	63-66	60 & lower
Mid-Continent*	.....	.....	.....	5.875-6.000	.....	5.500-5.625	5.125-5.250
Pennsylvania	.....	.....	6.750-7.000	.....	.....	.....	.....
Gulf Coast‡	6.00-6.50	.....	.....	§5.750-6.250	§5.750-6.250	§5.250-5.750	§5.000-5.500
Northeast Coast	9.80	.....	.....	9.2	9.2	.....	.....
Pacific Coast	.....	6.500-7.000	6.250-6.500	6.125-6.250	5.750-6.000	5.125-5.250	4.750-5.000

*Basis Group 3. †1939 C.F.R. (research method). ‡Integrated companies restricted to lowest prices. §Unleaded.

Quotations are f.o.b. plant in cents and in cents per gallon except where otherwise noted. They are exclusive of the federal excise taxes of 1.5 cents a gallon on gasoline and 4.5 cents a gallon lubricating oils, and do not include marine lighterage charges.

Natural Gasoline

Grades:	26-70	18-55	75-85(350-375)
Oklahoma (Group 3)	3.625	4.350	.....
North Texas	3.250	3.900	.....
North Louisiana	3.375	4.050	.....
California	.....	.....	4.875-5.500

Kerosene and No. 1 Fuel Oil

Gravity:	46	45	42-44	41-43	38-40
Mid-Continent*	.....	.....	4.500	4.375	.....
North Louisiana	.....	.....	.....	4.500-4.750	.....
Pennsylvania	6.250-6.625	6.125-6.250	.....	.....	.....
California	.....	.....	.....	4.500-5.500	4.250
Northeast Coast	.....	.....	.....	6.80	.....
Gulf Coast	.....	.....	.....	3.875	.....

*Basis Oklahoma Group 3.

Tractor, Diesel and Bunker Fuel Oil

Specifications:	46-48° G.	24 D.I.	48-52 D.I.	58 & above	Diesel bunkers	Bunker C
Mid-Continent*	4.125	.....	.....	.....	.....	.....
California	.....	2.750-4.000	.....	.....	‡$1.35-1.45	$0.85-0.90
Gulf Coast	.....	.....	4.000	4.125	1.45	0.85
Northeast Coast	.....	.....	.....	6.800	2.780	1.65
North Louisiana	.....	.....	.....	.....	.....	†0.80-0.85

*Basis Oklahoma Group 3. †10-14° gravity. ‡Pacific Specification 200.

Furnace Oil, Gas Oil, Fuel Oil

	No. 2	No. 3	No. 5	No. 6
Mid-Continent*	3.625-3.750	3.500-3.625	$0.85	$0.85
Pennsylvania (West)	5.875-6.125	5.875-6.000	†5.250-5.500	.....
Northeast Coast	6.7	6.7	1.95	1.65
Pacific Coast	5.5	5.5	†0.80-95	§0.80
Gulf Coast	3.875-40	.....	1.65	0.85

*Basis Oklahoma Group 3. †36-40 gravity fuel oil. ‡Pacific Specification 300. §Pacific Specification 400.

Lubricating Oils

Bright and Steam Refined

OKLAHOMA (Group 3)—		
200-210 D, 10-25		27.00
150-160 D, 0-10		23.00
120-125 D, 0-10		22.00
Steam refined:		
600 dark green (untreated)	9.00	9.50
PENNSYLVANIA—		
Bright Stocks (Pennsylvania Grade No. 8 color, 140-150 at 210, 545-550 flash):		
10 pour point		30.50
15 pour point		29.50
25 pour point	25.00	28.00
Steam refined:		
600	15.00	16.00
650	15.50	16.50
600 flash	16.00	17.50
630 flash	17.00	17.50

Neutral Oil

(Vis. at 100° F. except Pennsylvania and color N.G.A.)

OKLAHOMA (Group 3)—	
0-10 pour point:	
200-3	15.00
300-3	18.00
500-3	19.50
600-3	20.00

Note: Viscous neutrals, 10-25 pour, quoted 0.5 cent under 0-10 oils.

Neutral Oil

CALIFORNIA—		
Pale oils:		
200-2½-3	7.00	7.75
400-3-4	7.25	8.00
600-3-4	8.75	11.00
Red oils:		
200-4-5	7.00	7.75
400-5-6	9.00	11.00
500-900, 5-6½	9.25	11.25
GULF COAST—		
Pale oils:		
200-3	8.50	8.75
300-3	9.00	9.25
500-3½	9.75	10.00
750-3½	10.00	10.25
2,000-4	10.50	10.75
3,000-4	12.25	12.50
PENNSYLVANIA—		
150 vis. at 70° F., 3 color, 400-405 flash:		
Zero pour point		37.50
10 pour point		36.50
15 pour point		35.50
25 pour point		30.00
200 vis. at 70° F., 3 color:		
Zero pour point		39.50
10 pour point		38.50
15 pour point		37.50
25 pour point		32.00

Wax

(Cents per pound)

OKLAHOMA (Group 3)—	
124-126 (A.m.p.) w.c. scale	4.250
PENNSYLVANIA (Inland refineries)—	
122-124 (A.m.p.) w.c. scale	4.250
124-126 (A.m.p.) w.c. scale	4.250
NEW YORK—	
Wax in bags fully refined:	
130-132 (A.m.p.) wax	5.850
133-135 (A.m.p.) wax	6.150
Crude scale:	
124-126 (A.m.p.) w.s.	4.250
124-126 (A.m.p.) y.s.	4.250

EXPORT PRICES

Gasoline—60-62° Gravity, Maximum 400 End Point

Octane:	72-74	68-70	65-66	60
Gulf Coast	6.050	6.250-6.500	5.875	5.625
Pacific Coast	.....	6.125-6.500	5.875-6.000	5.500-5.625

Distillate and Fuel Oil

	Kerosene	Diesel fuel				Bunker
	41-43	24 G.	48-52 D.I.	58 D.I.	Bunkers	C grade
Gulf Coast	4.000-4.250	.....	4.125-4.375	4.375	$1.65-80	$0.85-95
Pacific Coast	4.750-5.000	1.25-30	.....	.....	†1.35-45	*0.80-90

*Pacific Specification 400. †Pacific Specification 200.

Lubricating Oils

	Neutral oils		Bright and cylinder stocks		
	200-3	150-3	200-3	150-3	600&630 S.R.
Mid-Continent	16.8	.....	28.8	24.8	.....
Pennsylvania	43-50	41-46	36-37	36-37	26.5-27

GASOLINE AND KEROSENE TANK-WAGON PRICES IN 50 CITIES

(Gasoline prices based on regular grades, tax included, undivided dealer)

ATLANTIC AND NEW ENGLAND

(Socony-Vacuum Oil Co., Inc., and Atlantic Refining Co.)

	Dealer tank wagon	Combined tax	Kero. tank wag.
Baltimore, Md.	15.45	5.50	10.20
Boston, Mass.	14.90	4.50	9.50
Burlington, Vt.	16.90	5.50	.....
Buffalo, N. Y.	16.20	5.50	10.30
Dover, Del.	16.70	5.50	11.20
Hartford, Conn.	15.60	4.50	.....
Manchester, N. H.	17.30	5.50	10.50
Newark, N. J.	14.70	4.50	9.40
New York, N. Y.	16.10	5.50	9.50
Philadelphia, Pa.	16.20	5.50	11.65
Pittsburgh, Pa.	16.70	5.50	12.00
Portland, Me.	16.30	5.50	9.60
Providence, R. I.	15.00	4.50	9.30
Washington, D. C.	14.70	3.50	10.70
Average 14 cities	15.91	5.07	10.32

(All prices undivided dealer basis.)

CENTRAL

(Standard Oil Co. of Indiana, Standard Oil Co. of Ohio, Continental Oil Co. and Texas Co.)

	Dealer tank wagon	Combined tax	Kero. tank wag.
Chicago, Ill.	13.40	4.50	10.30
Cleveland, Ohio	15.00	5.50	*9.00
Dallas, Tex.	13.00	5.50	7.00
Des Moines, Iowa	14.40	4.50	9.80
Detroit, Mich.	14.40	4.50	9.60
Fargo, N. D.	16.90	5.50	11.30
Huron, S. D.	16.30	5.50	10.70
Indianapolis, Ind.	15.20	5.50	9.80
Little Rock, Ark.	17.50	8.00	10.00
Milwaukee, Wis.	16.10	5.50	10.50
Minneapolis, Minn.	15.40	5.50	10.30
Omaha, Neb.	15.40	6.50	9.80
Tulsa, Okla.	16.50	7.00	8.50
Wichita, Kans.	12.70	4.50	8.00
Average 14 cities	15.15	5.57	9.61

*Includes 1-cent state tax.

SOUTHEASTERN

(Standard Oil Companies of New Jersey, Kentucky, and Louisiana)

	Dealer tank wagon	Combined tax	Kero. tank wag.
Atlanta, Ga.	21.40	7.50	11.40
Birmingham, Ala.	18.50	8.50	9.00
Charleston, S. C.	18.45	7.50	.....
Charleston, W. Va.	18.75	7.50	13.00
Charlotte, N. C.	19.60	7.50	11.00
Jacksonville, Fla.	21.40	8.50	10.40
Jackson, Miss.	17.50	7.50	8.50
Louisville, Ky.	16.50	6.50	8.50
Memphis, Tenn.	18.60	8.50	10.50
New Orleans, La.	16.75	8.50	*10.00
Norfolk, Va.	16.95	6.50	13.50
Average 11 cities	18.58	7.59	10.58

*Includes 1-cent state tax.

MIDWESTERN

(Continental Oil Co.)

	Dealer tank wagon	Combined tax	Kero. tank wag.
Albuquerque, N. M.	17.50	7.50	10.00
Boise, Idaho	20.10	6.50	16.50
Casper, Wyo.	17.00	5.50	12.00
Denver, Colo.	14.50	5.50	11.00
Helena, Mont.	17.00	6.50	13.00
Phoenix, Ariz.	18.50	6.50	12.50
Reno, Nev.	17.50	5.50	13.50
Salt Lake, Utah	18.50	6.50	14.50
Average 8 cities	17.58	6.25	12.88

PACIFIC COAST

(Standard Oil Co. of California)

	Dealer tank wagon	Combined tax	Kero. tank wag.
Portland, Ore.	17.00	6.50	13.50
San Francisco, Calif.	14.50	4.50	11.50
Seattle, Wash.	17.00	6.50	13.50
Average 3 cities	16.17	5.83	12.83
Average 50 cities	16.57	5.96	10.76
Average last week	16.57	5.96	10.76

La.-Arkansas Fields

(Continued from Page 98)

ft. The well found the top of the Nacatoch at 1,933 ft., Saratoga at 2,215 ft. and the Travis Peak at 2,944 ft.

ARKANSAS COMPLETIONS

Macedonia, Columbia County: Mid Continent 1 Sherman-Warnock, N½ NW 22-18s-21w, flowed 332 bbl. condensate, Smackover 8,870-85 ft., T.D. 8,900 ft.

McKamie, Lafayette County: Ridel Pet. 1 Layne-Olive, 31-17s-23w, dry, T.D. 9,639 ft.

Midway, Lafayette County: Arkansas Fuel Oil 2 Turner, SE SE 12-15s-24w, flowed 12 bbl. an hr., Smackover 6,473-83 ft.

Southwood Oil 2 Hodnett, NW NW 18-15s-24w, flowed 14 bbl. an hr., Smackover 6,440-87 ft.

Southwood Oil 3 Hodnett, NE NW 18-15s-24w, flowed 14 bbl. an hr., Smackover 6,370-6,402 ft.

New London, Union County: Marine Oil 1 Harper, NW NW 13-18s-12w, dry, T.D. 5,908 ft.

Urbana, Union County: Cresienn Oil 1 Parker-Witt, NW NW 2-18s-13w, dry, T.D. 3,591 ft.

LOUISIANA COMPLETIONS

Haynesville, Claiborne Parish: Midstates Oil 1 Waller, E½ SE 2-23n-8w, flowed 768 bbl., Pettit 5,341-58 ft., T.D. 5,425 ft.

Midstates Oil 1 Taylor, SE SW SE 3-23n-8w, flowed 1,461 bbl., Pettit 5,339-52 ft., T.D. 5,419 ft.

Georgetown, La Salle Parish: Placid Oil 1-B Tremont, NE SW 10-9n-1e, flowed 39 bbl., pay 1,506-10 ft., T.D. 3,826 ft.

La Salle Parish: O'Meara Bros. 1 Tensas Delta, NE SE 14-9n-1e, dry, T.D. 3,800 ft.

MISSISSIPPI COMPLETIONS

Sharkey County, 4 mi. S and W of Cary: British American 1 Lee Pickert, NE NE 22-11n-7w, dry, T.D. 3,287 ft.

British American 3 F. B. Houston, SW SE SE 15-11n-7w, location abandoned.

CRUDE-OIL PRICES

Representative selected crude prices from all sections of the country appear below:

East Texas	$1.25
Conroe	1.43
Tepetate, Louisiana	1.18
Illinois basin	1.37
Pecos County, Texas	.95
Bradford, Pennsylvania	3.00
Van, Van Zandt County, Texas*	1.08

*No change since 5-21-41.

Gravity Schedules

Top prices include all gravities above grades designated, and low prices include all gravities below grades designated:

Gravity	Signal Hill, Calif.	Oklahoma, Kansas	Gulf Coast Texas	West Texas*
18-18.9	$0.80	.....	.....	.....
19-19.9	.84	.....	$1.06	$0.70
20-20.9	.88	$0.85	1.08	.72
21-21.9	.92	.87	1.10	.74
22-22.9	.96	.89	1.12	.76
23-23.9	1.00	.91	1.14	.78
24-24.9	1.03	.93	1.16	.80
25-25.9	1.07	.95	1.18	.82
26-26.9	1.11	.97	1.20	.84
27-27.9	1.15	.99	1.22	.86
28-28.9	1.18	1.01	1.24	.88
29-29.9	1.20	1.03	1.26	.90
30-30.9	1.23	1.05	1.28	.92
31-31.9	.....	1.07	1.30	.94
32-32.9	.....	1.09	1.32	.96
33-33.9	.....	1.11	1.34	.98
34-34.9	.....	1.13	1.36	1.00
35-35.9	.....	1.15	1.38	1.02
36-36.9	.....	1.17	1.40	1.04
37-37.9	.....	1.19	1.42	1.06
38-38.9	.....	1.21	1.44	1.08
39-39.9	.....	1.23	1.46	1.10
40 and above	.....	1.25	1.48	1.12

*Includes Lea County, New Mexico.

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418 Bowen Bldg., Washington, D. C.

Leases and Drilling Blocks

LEASES—East Texas, La., South Ark. 20 acres up, dollar acre up.—Owners—Address Attorney, Box 1122, Little, Rock, Ark.

LEASES ROYALTIES

PRODUCING OR NONPRODUCING

Texas, New Mexico, Oklahoma, Louisiana and Illinois
20 Years' Experience
Inquiries Invited

B. D. BUCKLEY

60 Broadview Drive, Clayton St. Louis, Mo.

FOR SALE: Oil and Gas Leases on proven structures, drilling propositions, small production and fluorspar deposits. Reports furnished. W. P. Harley, Bowling Green, Kentucky.

FOR SALE: Oil and gas leases North and South Dakota, reasonably priced. Owner, P. O. Box 1163, Tulsa, Oklahoma.

FREE LEASE for well N.E. 17-11-15, N.E. 17-12-15, N.E. 24-14-13, Russell Co., Kans. None over 2 mi. from production. American Investment Corp., Newman Grove, Nebr.

GEORGIA

Deep Drilling now on in Georgia. For information write, C. W. DEMING, Waycross, Ga.

FOR INVESTMENT with great opportunity from oil, buy land developing R.M. area. $7. acre. Box B-321, The Oil and Gas Journal, Tulsa, Okla.

ILLINOIS WILDCATTER

Thoroughly posted as to possibilities for shallow production, in Coles and Edgar counties, acreage for sale, or for test. Sam J. Burkitt, Chrisman, Ill.

FOR SALE: Twenty Acre lease, B. Estes Survey, for good protection near Humble deep well, Shelby County, Texas. Also 20 acres adjoining Pewett's location block. Write or wire for particulars. C. A. Parker, Box 451, Center, Texas.

FOR INVESTMENT with great opportunity from oil, buy land developing R.M. area, $7. acre. Box B-321, The Oil and Gas Journal, Tulsa, Okla.

Financing

CAPITAL SEEKERS — Interested in raising $25,000 or more for a legitimate project should communicate with AMSTER LEONARD, Fox Theater Bldg., Detroit, Mich.

Business Opportunities

REFINERY FOR SALE. For particulars write to Albany Oil and Refining Company, Box 433, Laramie, Wyoming.

FOR SALE: Timber lands; manganese, cinabar, antimony, lead, zinc, and copper lands. For prices, options, and terms write G. E. Crowley, Waldron, Ark.

IN OKLAHOMA mining field 400 fine ranch farm land, improvements, four developed zinc mines shafts sunk ready be equipped placed production. Address O. D. Baker, Miami, Okla.

Legal Blanks

THE BURKHART LINE of Legal Blanks Since 1908. Oil-Gas and Business Forms for Mid-Cont. and Illinois Basin. Leases Rev. with Gov.'s Regulations. Catalog and Samples. Burkhart Ptg. & Sta. Co., 115 So. Cincinnati, Tulsa, Okla.

Oil Industry Printing

OIL FIELD LEGAL BLANKS

Leases, assignments, releases, township plat books, well records, etc. Request on your letterhead gets free catalog. Olds Press 215 East Third St., Tulsa, Okla.

Ranches and Farm Lands

EASTERN Oklahoma Ranch: 2316 acres, well improved; fenced and cross fenced; modern house, good barn and stock sheds. Abundance of water from ponds and creek. Will carry 1000 head of cattle. Some good farm land. If you have idle money, this is a safe investment. Price $36,500. BLAIR REALTY CO., 3-6126, Tulsa, Oklahoma.

Situations Wanted

PRODUCTION OR FIELD SUPERINTENDENT: High class practical man. Twenty years experience. Box B-286, The Oil and Gas Journal, Tulsa, Okla.

Help Wanted

NOTICE TO ADVERTISERS

Advertisers offering positions to workers skilled in critical war industries are requested by the War Manpower Commission to include the following sentence in their advertisement:

"Applications from those now employed in war industries will not be considered."

ENGINEERS WANTED

Chemical or Mechanical with minimum one year oil refinery plant operation or maintenance experience. Require University Engineering School graduate with basic knowledge principles fluid flow. To work on process flow sheets, equipment selection and general handling oil refinery. Defense Contracts as assistant to senior engineers. No aliens or men engaged Defense work considered. Opportunity up to individual. In reply state experience, education, draft status, salary expected. Foster Wheeler Corporation, Room 2402, 165 Broadway, New York.

PROCESS ENGINEER, Construction Engineer wanted for new Oklahoma refinery being built for aviation gasoline. Must be experienced refinery operation and design. Write fully. State salary desired. Permanent opportunity. Write Box B-330, The Oil and Gas Journal, Tulsa, Okla.

Royalties

SMALL AMOUNT of high grade producing royalty for sale, Oklahoma City field. Priced to yield 25% current rate of return. R. M. Millard, Eau Claire, Wis.

Royalties

ANDREW J. BARRETT
The Philtower
Tulsa, Oklahoma.

WE BUY & SELL all types of Oil and Gas Royalties. Sales restricted to registered dealers only. Grimes Royalty Co., National Mutual Bldg., Tulsa, Okla.

OIL PRODUCERS urgently need these 2-U. S. and 1 Canad. Patents for the Extraction of Oil from exhausted formation of Petroleum and Oil bearing sands, for sale or in royalty by Leo Strandell, Lometa, Calif.

FOR SALE: Landowner's Royalty under 160 acres leased to Humble Oil & Ref. Co. in Lea Co., N. M. North of the Big Hobbs Pool. 27 pools in County, HARRY S. WRIGHT, FARMINGTON, N. M.

Equipment Wanted

WANTED

Abandoned *Pipe Lines*, in or out of the ground, *Oil Wells, Steel Buildings* and Steel Storage *Tanks* of all sizes.

JOS. GREENSPON'S SON PIPE CORP.
National Stock Yards, St. Clair Co., Illinois.

WANTED: 3—25 HP type 7E Bessemer or Hope Engines with direct connected compressor.

1—Two stage high pressure compressor to develop minimum of 20 cu. ft. per minute, suitable for making into V-belt drive.

THE VEEDER SUPPLY & DEVELOPMENT COMPANY
Cherryvale, Kansas.

WANTED — Steel tanks total 120,000 gallon capacity. Will take 5000 gallon or larger. Tidewater Equipment & Machinery Corp., 305 Madison Ave., New York, N. Y.

WANTED: Inside Micrometers, range 2 in. to 14 in.; also outside micrometers, same range. Would consider instruments covering part of these ranges. In reply give make, style, graduations, and price. TALCO ASPHALT & REFINING DIVISION OF SOUTHPORT
P. O. Box 1011, Mt. Pleasant, Texas.

ONE—3000 to 5000 KW Generator, 3 phase, 60 cycle, 6600 Volt, 3600 RPM, AC. INDUSTRIAL EQUIPMENT CO.
338 Baronne St., New Orleans, La., RA. 0889

WANTED: Used wax molding press. Please state condition, location, and price. Box B-293, The Oil and Gas Journal, Tulsa, Okla.

Equipment Wanted

WANTED TO BUY

Pipe of all sizes, 2" to 16", inclusive, also refineries, pipe lines and abandoned wells. Wire, write or phone

Louisiana Iron & Supply Co.
Shreveport, La.

For Sale—Equipment

FOR SALE: 50—5½" OD standard IBBM NRS SE CI Gate Valves, unrepaired. $10.00 each. Patridge, Cities Service Oil, Bartlesville, Okla.

FOR SALE: Two Double Drum Cardwell Spudders, mechanical, like new. Complete tools, lines, dog house, and light plant. Room 314, Insurance Bldg., Oklahoma City, Okla.

TANKS FOR SALE

220,000 gal. 43' x 20' Steel Tank. 1—14,000 gal. and 2—11,000 gal. and 1—8,000 gal Steel Tanks. 12—9' x 8' Wood Tanks.
L. M. STANHOPE
Wayne, Penna.

TRUCKS

2—International Model KS-7, 176" wheelbase chassis, 6.14 & 8.52:1 gear ratio; 8.25 x 20 10-ply front and 9.00 x 20 dual rear tires; standard cab, two-speed rear axle; equipped with Tulsa Winch Manufacturing Company split shaft power take-off.

1—International Model K-8-F tandem, 197" wheelbase chassis, 7.16:1 gear ratio; 8.25x20 10-ply front and 9.00 x20 dual rear Ground Grip tires; standard cab, FBC-401 engine with F-52-C transmission; equipped with Tulsa Winch Mfg. Company split shaft power take-off and Model 18 winch mounted on rear of truck under chassis.

The Parkersburg Rig & Reel Company
O. C. S. Division
Coffeyville, Kansas
Phone LD 7022 P. O. Box 573

EQUIPMENT FOR SALE

Tanks—One 7500 barrel and one 15,000 barrel capacity. Excellent condition. Also one 200,000 cu. ft. two-lift gas holder. Write Power Construction Co., Minneapolis, Minnesota.

FOR SALE: Star machine with tools, 5" to 10" complete. Would consider working on same, or anything pertaining to the oil field. Have had years of experience handling production. D. G. Minesinger, 308 North Street, Iola, Kansas.

FOR SALE

2000 Reconditioned Dresser Couplings

10¾" O.D., ¼x5 centers, complete with new bolts and gaskets.

Write or wire

NATIONAL SUPPLY CO.
Second-hand Division
Logan, Ohio

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Classified advertising rates: First insertion, 35 cents a line; each additional insertion, 25 cents a line, PAYABLE IN ADVANCE. Six words usually make a line. Count as a word each one-letter word and each group of figures. White-space computed at regular line rate. Allow two extra lines for blind ads. Ads of less than three lines not accepted. No formal acknowledgment is made, and proofs cannot be shown in advance of publication.

	1 time	2 times	3 times	4 times
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4 Lines	1.40	2.40	3.40	4.40
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6 Lines	2.10	3.60	5.10	6.60
7 Lines	$2.45	$4.20	$5.95	$7.70
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9 Lines	3.15	5.40	7.65	9.90
10 Lines	3.50	6.00	8.50	11.00

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This space may be contracted for over a period of one year from the date of the first insertion and is PAYABLE IN ADVANCE, MONTHLY.

We reserve the right to withhold all advertising of questionable character. To avoid delay be sure to send remittance with copy. We will set your ad in the smallest amount of space possible and refund all overpayments. One-time insertions will not be run until fully paid. Forms close MONDAY NOON before each issue date.

THE OIL AND GAS JOURNAL
Tulsa, Oklahoma

COMPLETE DUBBS REFINERY FOR SALE

Vis-Breaker, Topping and Asphalt Plant

4,000 barrel topping—2,000 barrel Vis-Breaker—500 barrel Asphalt—Less than 25,000 barrels of crude ever put through this plant. Complete instrument board, new, never hooked up. Electric eye control. Electric salt Settlers. Pump house complete with explosion proof motor driven centrifugal pumps.

18 heat exchangers. Over 50 tanks from 250 barrels to 25,000 barrels included. Car load Ethyl plant. Latest type of equipment offered for sale by any refinery.

Location: Titan Oil Co., Stark, Mich. (Detroit suburb) For sale in its entirety, parts or will lease in its entirety. Have complete Universal Oil Company's inspection report, together with all blue prints.

SONKEN-GALAMBA SUPPLY COMPANY

W. C. Berry or H. J. Galamba
Riverside at Second, Kansas City, Kansas

Robert W. Duden
Twenty-First at Union, Tulsa, Oklahoma

FOR SALE: 27½" Ideal Rotary Table, 5 sheave 200 ton Crown Block, 4 sheave 72" traveling block, 8" Ideal enclosed rotary hook, Melton Machinery & Supply Co., Seminole, Okla.

FOR SALE: At Oklahoma City, 50 Solid and Split Casing Spiders with Slips for 9" and 9⅝" OD Casing. Complete, $50.00 each. Patridge, Cities Service Oil Co., Bartlesville, Okla.

USED SPUDDERS

We offer for immediate delivery, three "Cardwell" Model K Spudders, Complete with Mast, 145 H.P. Waukesha Motors, 1500 Watt Kohler Light Plants, Wire Lines, Drilling and Fishing Tools, Fittings and Supplies. Each a Complete Unit.

Drilling capacity up to 5000 feet. All practically new. Used less than nine months. Located our yards, Salem, Illinois.

PRICED FOR QUICK SALE

THE BRIDGEPORT MACHINE COMPANY
WICHITA, KANSAS

FOR SALE

We offer 522 55-ton all-steel, self-clearing DOUBLE HOPPER CARS consisting of:

178 USRA construction; built 1921-1922; with A-B brakes; 1880 cubical feet capacity.

344 built 1910-1915; with KD-1012 brakes, 1683 feet capacity.

ALL HAVE FULL "U" CAST STEEL TRUCK FRAMES.

All cars now in service. Prices upon request.

TERMS: Cash with purchase.

DELIVERY CAN COMMENCE IMMEDIATELY AND BE COMPLETED IN ABOUT 60 DAYS—AND VERY POSSIBLY SOONER.

Some $30,000 to $40,000 NEW REPAIR MATERIALS also available which you may wish to have inspected at the same time.

TIME and EXPEDITION ESSENTIAL and DESIRABLE.
Yours for Victory,

IRON & STEEL PRODUCTS, Inc.
37 years' experience
13412 S. Brainard Ave., Chicago, Illinois
"ANYTHING containing IRON or STEEL"

DIESEL—GAS—ENGINES
Large selection — All sizes and types. Generator units, marine engines, gasoline engines, auxiliaries—boilers, steam engines, and turbo-generator sets.
Complete information on request.
A. G. SCHOONMAKER COMPANY
18 Church Street, New York, N. Y.

10,000 Ft. 2" Line Pipe, Screw & P.E. Also 3", 4", 5½", 7", etc. Large stock of fittings, valves & other used material. GILBERT PIPE & SUPPLY, Electra, Tex.

FOR SALE: Star Mfg. Company, portable cooling tower, telescoping type, 7' wide, 13' long, 8' high. All steel. Melton Machinery & Supply Co., Seminole, Okla.

FOR SALE: Complete Wilson Portable Rotary Rig with telescoping mast, suitable for 2,000 ft. drilling. Melton Machinery & Supply Co., Seminole, Okla.

2—450 H.P. Water Tube Boilers, 1—955 H.P. Water Tube Boiler.
2—Steel Buildings 80'x135' and 80'x104'.
2—3000 c.f.m. Air Compressors.
1—2500 c.f.m. Air Compressor.
Large Assortment of Small Compressors.
1—100,000 gal. Steel Tank on 100 Foot Tower.
1—25,000 gal. Steel Tank on 90 Foot Tower.
1—35,000 gal. Steel Tank on 50 Foot Tower.
1—Bucyrus 3½ Yard Diesel Dragline.
1—Bucyrus 18 Ton Steam Crane on Cats.
2—5,000 Barrel Steel Storage Tank with Wooden Roofs. Large assortment of smaller tanks.
Large assortment of used Steel Plates, I-Beams, Channels, Pipe and Fittings.
INDUSTRIAL EQUIPMENT CO.
338 Baronne St., New Orleans, La.
RAymond 0889

FOR SALE: 12 K.W. Portable Light Plant Powered by 35 H.P. International Engine. Melton Supply Co., Seminole, Okla.

25 K.W. and 40 K.W. Gas Engines, 220 volts, D.C. Two 100 K.W. Gas Engine-Generator Sets, 220 volts, D.C. 7x6 Ingersoll-Rand ER-1 Air Compressor. Six-inch Oster Pipe Threading Machine. Also large stock of lathes, pipe machines, milling machines, etc. Send for our list.
Terms to suit.
CINCINNATI MACHINERY & SUPPLY CO.
26 West 2nd St., Cincinnati, Ohio.

FOR SALE: Approximately 250—2", 3", 4" and 6" LH EH SL UP Klein Pipe Tongs, used. $1.00 per inch per tong. Patridge, Cities Service Oil, Bartlesville.

F&M Power Pump, 3" x 4", excellent condition. Also Centrifugal and Steam Pumps. GILBERT PIPE & SUPPLY, Electra, Tex.

FOR SALE: 7¼ x 14 Oil Well Power Slush Pump. Melton Machinery & Supply Co., Seminole, Okla.

FOR SALE: 30—1½ KW Steam Turbine Generators. $25.00 each. Patridge, Cities Service Oil, Bartlesville, Okla.

FOR SALE AT BARGAIN—2 complete drilling rigs, 1 Unit Rig Company U-10 with 13,000 Diesel caterpillar with 7⅛ x 12 G. D. pump; also 1 type R. Cardwell double drum draw works, 160 HP engines ready to move on job. Box 1439, Tulsa, Okla.

⅞" Oklahoma City used sucker rods, 50,000 feet, good condition. 50—10 and 12" x 23' Channels. 3—24" x 20' Beams and some short pieces, smaller sizes. Some reinforcing sucker rods, all at Oklahoma City. M. R. Travis, 1702 S. Boulder, Tulsa, Okla.

FOR SALE: Complete Power Rig with three caterpillar Diesel motors, 425 H.P., suitable for 7000 foot drilling. Write Box 711 Longview, Texas.

BUY AND SELL

Used Engines, Compressors, Power Plants and Gasoline Plant Equipment.

We Rebuild and Guarantee

L. F. SMITH CO.
217 W. Archer, Tulsa, Okla.

STORAGE TANKS, Vessels, Towers, Pumps, Engines, Compressors, Meters, etc. GILBERT PIPE & SUPPLY, Electra, Tex.

FOR SALE
1—Imperial Type 10, 10"x4½"x10" compressor with 100 H.P. G.E. motor, skid mounted.
1 each—3'x10', 5'x15', 7'x24' separators, standard pressure.
1—15 H.P. F & M Gas Engine.
1—3'x7' scrubber tank.
Miscellaneous group of valves and fittings, 3" up.
1—Model 47 F & M oil engine, skid-mounted, complete with fuel tank.
Vaughn S. Bryan Phone 4-4111
Kennedy Bldg. Tulsa, Okla.

FOR SALE—Type 5-C-3 Union Tool Unitized Draw Works with Automatic Cathead. A-1 Shape. Make Offer. P. O. Box No. 1513, Oklahoma City, Okla.

BARGAIN—12 KW 125-Volt G. E. Generator complete with switch board, etc. GILBERT PIPE & SUPPLY, Electra, Tex.

1 COOPER-Bessemer 3 cylinder engine. Type G M R size 12" x 14", 225 HP direct connected to Cooper-Bessemer Compressor, high side 12" x 14", low side 8½" x 14". Excellent condition. Box B-291, The Oil and Gas Journal, Tulsa, Okla.

Wyoming Discovery Directs Attention to Lakota Sand

(Continued from Page 25)

and older beds as the objectives. These tests were made mostly on seismograph surveys, due to the lack of surface evidence of structure, and in some instances the high proved to be granite ridges. However, the work indicated that the area holds very favorable prospects when more wildcatting is done on the basis of knowledge gained in the first campaign. About this time the Illinois field came in and prospecting ceased.

The General Petroleum discovery at Horse Creek on the folding to the east of the mountain range is in line with the fields developed on the western rim of the basin in Colorado and the immediate effect will be to revive interest in the Dakota-Lakota possibilities in Weld, Morgan, and adjoining counties. In fact a revival of wildcatting in that area already is in its incipient stages and at least two tests were being organized before the Horse Creek well struck the pay. Indications at this time that the Lakota, the lower of the Dakota series, is the most promising horizon at Horse Creek bears out the contention of some drillers that tests in northeastern Colorado drilled only to the Dakota are not conclusive.

The Horse Creek discovery does not tie in with the producing fields in Wyoming. Those in the central and eastern part of the state mostly are around the rim of an entirely separate basin, the Powder River basin. Around the rim in a circular direction at the south are the Salt Creek Teapot, Cole Creek, Big Muddy, and Lance Creek fields. Powder River in itself is an immense basin and it generally is believed that structural conditions within the basin are favorable, but almost no wildcatting of a conclusive nature has taken place.

The Horse Creek structure first was located by means of aerial photography and then by surface geology and by seismograph surveys. The General Petroleum Corp. has a block of 12,000 acres covering the structure.

Journalisms;

H W. (Bill) HARTS, who wrote the description of the new Warren Petroleum Corp. project in the New Harmony-Calvin-Griffin area of Indiana and Illinois, has been in the business of erection and operation of such plants for over 20 years.

He got his start in the oil business with a construction crew of Amerada Petroleum Corp. in 1921, and in 1925 became superintendent of construction for that company, filling that position for 10 years.

Mr. Harts became assistant general manager of the Natural Gasoline Corp., a Warren subsidiary, when it took over Amerada's gasoline-manufacturing facilities. Later he became vice president of Warren Petroleum in charge of manufacturing.

He moves about the country a great deal supervising the operation of plants in Oklahoma, New Mexico, Kansas, Texas and Illinois. Bill likes to travel by air so well that he is learning to pilot a plane.

The technical background which he is constantly employing in his work was obtained at University of Chicago and University of Illinois, from which he was graduated in 1921.

•

NEXT week the Journal begins a series discussing the sources of butadiene, the accepted synthetic-rubber base. For 80 years the term has appeared in technical literature but it remained for Pearl Harbor to popularize the word. Thanks are due to scientists who, in two generations, have found means to convert petroleum, alcohol and coal into butadiene, and to engineers who this year are using these findings to design and build plants to make superior synthetic rubber. Thanks, also, that petroleum serves as the natural charging stock, as outlined in the series of articles to come.

•

ROBERT B. BOSSLER, who collaborates with Parke A. Dickey this week to give you "Effects of Well-Cleanout Work in the Venango District," on Page 33, is a native Pennsylvanian. He received his education at University of Pittsburgh, as a petroleum engineer. During World War I he served as lieutenant of engineers. He was geologist in this country and in South America, and was production superintendent with Chemical Oil & Gas Co. He engaged in water-flooding operations for Penn Petroleum Co., and in 1935 joined Brundred Oil Corp., Oil City, Pa.

Robert B. Bossler

Dr. Parke A. Dickey

Dr. Dickey was born in Chicago in 1909. He received his doctor of philosophy degree in geology from Johns Hopkins in 1932. He was with Lago Petroleum Co. as petrographer, and with Tropical Oil Co. in Colombia as field geologist. Employed by Pennsylvania Topographic and Geologic Survey in 1938, he served as geologist in charge of oil and gas work until recently, when he was named chief geologist for Forest Oil Co., Bradford, Pa.

CALENDAR

October

AMERICAN INSTITUTE OF MINING AND METALLURGICAL ENGINEERS, Petroleum Division, Austin, Tex., October 29-31.

WESTERN PETROLEUM REFINERS ASSOCIATION, technical meeting, Shreveport, La., October 30.

November

CALIFORNIA NATURAL GASOLINE ASSOCIATION, Los Angeles, Calif., November 6.

PETROLEUM ELECTRIC POWER ASSOCIATION, business session of member-company executives and election of officers, Baker Hotel, Dallas Tex., November 12.

AMERICAN PETROLEUM INSTITUTE, twenty-third annual meeting, Palmer House, Chicago, Ill., November 9-13.

AMERICAN INSTITUTE OF CHEMICAL ENGINEERS, thirty-fifth annual meeting, Netherlands Plaza Hotel, Cincinnati, Ohio, November 16-18.

AMERICAN ASSOCIATION OF OILWELL DRILLING CONTRACTORS, second annual meeting, Mayo Hotel, Tulsa, November 19-20.

AMERICAN CHEMICAL SOCIETY, national chemical exposition and national industrial chemical conference, Sherman Hotel, Chicago, Ill., November 24-29.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS, annual meeting, New York, November 30-December 4.

December

NEW MEXICO OIL AND GAS ASSOCIATION, annual meeting, Artesia Hotel, Artesia, N. M., December 2.

PETROLEUM ACCOUNTANTS SOCIETY OF OKLAHOMA, Hotel Mayo, Tulsa, December 17.

1943

February

AMERICAN INSTITUTE OF MINING AND METALLURGICAL ENGINEERS, New York, February 15-18, 1943.

April

AMERICAN PETROLEUM INSTITUTE, Division of Production, Eastern district, William Penn Hotel, Pittsburgh, Pa., April 8-9, 1943.

May

PETROLEUM INDUSTRY ELECTRICAL ASSOCIATION, annual meeting, Houston, Tex., May 5-6, 1943.

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the OIL AND GAS JOURNAL

OCT 30 1942

OCTOBER 29
1942

PRICE
20 CENTS

WORTH KNOWING ⚓ WORTH SHOWING!

THE UNITED STATES NAVY afloat consists of the Atlantic, Pacific and Asiatic Fleets. Each fleet is under the general direction of the Chief of Naval Operations—an Admiral directly under the Secretary of the Navy and immediately under command of its own Commander-in-Chief who may also be an Admiral or Vice Admiral.

Authority flows from the fleet commander through the rank of officers in ratio to the size of divisions, the type and number of its vessels and their function, on down to the officer in charge of each vessel.

Below are the individual types of combat vessels and the rank of officers commanding them.

PATROL TORPEDO BOATS

A Lieutenant commands a Squadron of two or more divisions, of three or more PT's under command of Lieutenant or Lieutenant (j.g.). Each boat is commanded by a Lieutenant (j.g.) or an Ensign.

SUBMARINES

A Captain or Commander commands a Squadron of two or more divisions with four to six submarines in each.

DESTROYERS

A Rear Admiral is in command of a flotilla, comprising two Squadrons of two divisions each, with four destroyers in each division. A Captain is in command of each squadron, with a Lt. Commander commanding each ship.

CRUISERS

Four or more cruisers comprise a Division, commanded by a Rear Admiral, with a Captain in command of each vessel.

BATTLESHIPS

Three ships comprise a division commanded by a Rear Admiral, with a Captain in command of each vessel. Two divisions are commanded by a Vice Admiral.

AIRCRAFT CARRIERS

Two carriers comprise a division, commanded by a Rear Admiral, with a Captain in command of each carrier. Two divisions are commanded by a Vice Admiral.

HUGHES TOOL COMPANY • HOUSTON, TEXAS

Keep 'em Rolling!

We at home can make the road to victory much smoother for these boys by saving rubber, delivering scrap, working hard, buying bonds. It's asking little, compared to their task.

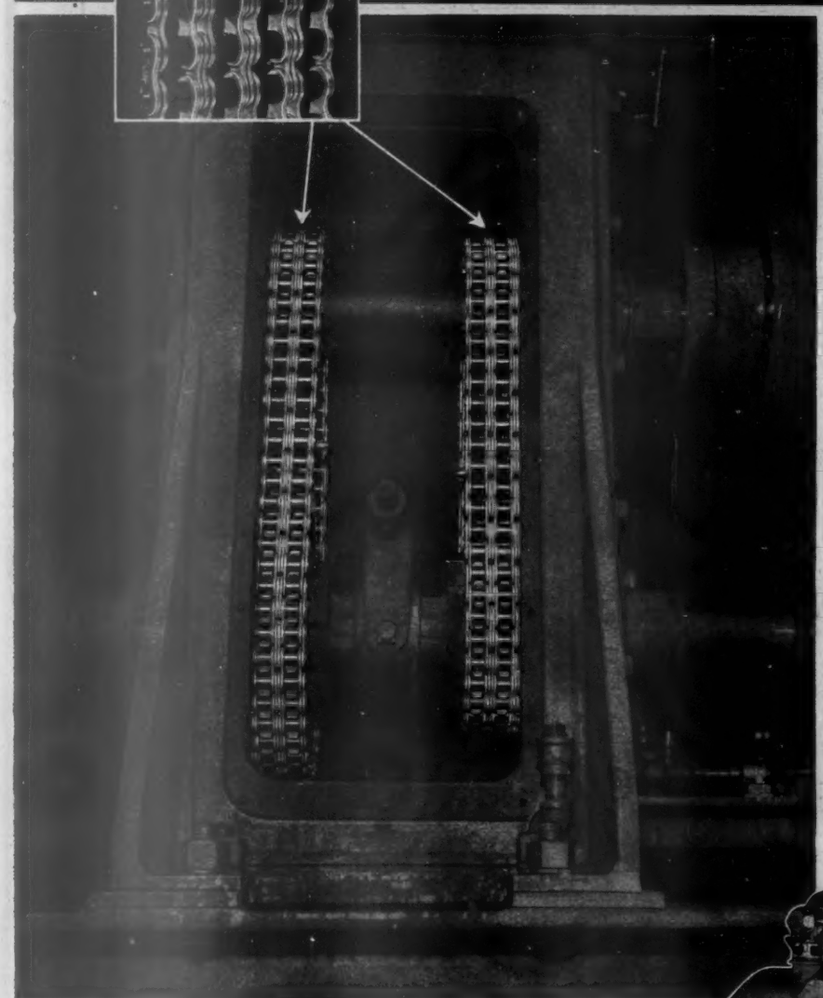
Wyatt's

OFFICIAL U. S. ARMY PHOTOGRAPHS

POWER TO SPARE----

LINK-BELT Silverlink ROLLER CHAINS

Drive this Modern Oil Field Unit



● A deep well program of a major drilling company called for something new in independent rotary drives . . . called for more power; more speed. Men with years of drilling experience designed this one. Men with years of shop experience built it. And, those veterans of the oil country who operate it draw no bounds in their praise of it.

A 200 H. P. (900 r.p.m.) electric motor, drives the rotary table through a 2-speed transmission direct connected to the table with a flexible coupling . . . . all skid mounted as a single unit. Two 1¼" pitch quadruple-width Link-Belt Silverlink finished steel roller chains on Link-Belt sprockets make up the transmission drives. Four heavy duty Link-Belt Friction Fighter radial-thrust roller bearings add to the smooth performance. Chains and bearings are force feed lubricated by an oil pump driven from an extended shaft sprocket.

This step of progress in rotary drives wasn't long justifying its place among worthwhile oil field improvements. While new, and previously untried as a unit, its success was a foregone conclusion even before assembly was begun. The valued experience of the men and equipment employed in producing it assured that. Behind Link-Belt Chains, for example, lies more than two-thirds of a century of chain building experience. Little wonder more men in more industries depend on Link-Belt Chain Drives when they need power . . . . continuously dependable power . . . . to spare.

LINK-BELT COMPANY

Leading Manufacturer of Materials Handling and Mechanical Power Transmission Machinery

Indianapolis Dallas Houston Los Angeles Kansas City, Mo.
New York Toronto

Other offices and warehouses in principal cities 2054

Guard removed from transmission housing shows portion of two Link-Belt quadruple-width Silverlink Roller Chain drives. Insert above illustrates this type of chain.

•

In cooperation with the government conservation program, Silverlink roller chain will hereafter be furnished in a durable "blackout" finish.

•

Complete unit mounted on skid. 200 H. P. electric motor drives rotary table through direct connected 2-speed chain drive transmission.

THROW YOUR SCRAP INTO THE FIGHT!

New—for liquid level or rate of flow

THE TAYLOR MANOMETER THAT USES NO MERCURY!

Have you seen Taylor's new Aneroid (mercury-less) Manometer for flow and liquid level instruments?

IT USES NO MERCURY... differential pressure is measured by a metal bellows.

IT HAS A TORQUE TUBE instead of a stuffing box . . . no leakage, no friction, no lubrication.

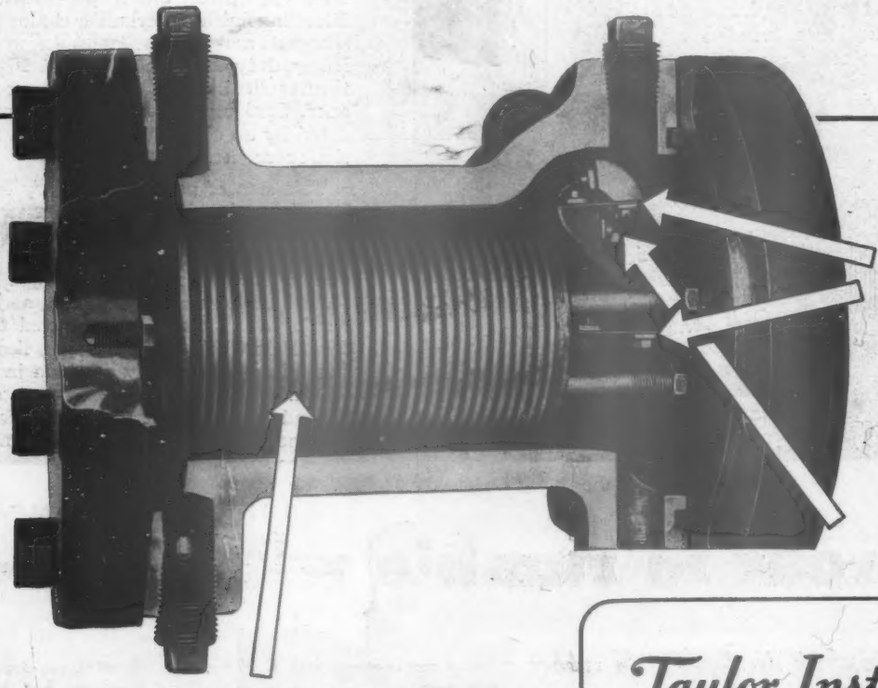
IT HAS NO PIVOTS or internal springs. No friction, lost motion, or wear!

If you want to save mercury . . . or want to avoid worry about its contamination of product, theft, or "blowing" . . . if you want to reduce maintenance, the Taylor Aneroid Manometer is the instrument for you.

If you are troubled with hard-to-handle fluids, where mercury or a leaking stuffing box would be a constant headache, this instrument may be the *one practical solution!*

Whether your problem is measuring or controlling liquid level or rate of flow, let your Taylor Field Engineer show you how this new mercury-less manometer works! Or write for Bulletin 98160, Taylor Instrument Companies, Rochester, N. Y. or Toronto, Canada.

Instruments for indicating, recording and controlling temperature, pressure, humidity, flow and liquid level.



NO PIVOTS—*No friction, lost motion, or wear. Flexible flat metal strips take the place of pivots, springs, or bearings.*

NO STUFFING BOX—*Measurement is transmitted through a torque tube. No leakage. No friction. No lubrication!*

NO MERCURY—*Differential pressure is measured by a metal bellows. No contamination—no worry about theft or "blowing".*

Taylor Instruments

MEAN

ACCURACY FIRST

IN HOME AND INDUSTRY

★ ★ KEEP ON BUYING ★ ★
U. S. WAR BONDS AND STAMPS

Photo courtesy Huckins Yacht Co

From roar to rumble with rubber

A typical example of B. F. Goodrich development in rubber

TORPEDO boats need speed and power, and one of the ways to get power out of a boat is to leave off the muffler—because there's no back pressure. But without a muffler even a little putt-putt of one or two horsepower is noisy.

A builder of fast seagoing cruisers had been asked to design a boat of over 3000 horsepower — more even than some of the big bombers — and so fast it could come in close to enemy ships, loose its torpedoes and get away in a zigzag course before gunners were even ready to shoot. But it mustn't make too much noise!

The designer knew that much of the noise of power boats is caused by metal exhaust pipes. He had used B. F. Goodrich rubber bearings and many other rubber products to reduce noise and vibration — why couldn't a rubber pipe be made that would reduce noise of the exhaust? He discussed the problem with B. F. Goodrich men.

The rubber would have to resist the hot petroleum exhaust gases; and it would have to stand up just as long as metal. Could such a rubber be found or made as a special compound? Rubber pipes were designed, made, tried out, and the boat designer found that a rubber pipe without a muffler was quieter than a metal pipe with muffler — and lasted even longer.

Many B. F. Goodrich developments these days are going into war products, but here's one that will benefit boat owners when the war is over. Even during the period of rubber restrictions research work goes on and many future improvements in rubber are being planned. *The B. F. Goodrich Company, Industrial Products Division, Akron, Ohio.*

B.F. Goodrich

FIRST IN RUBBER

Let Norton Abrasive Engineers Help You on Your Grinding Jobs

20-Q2T-H is the recommended Norton specification for the straight wheel used to remove the bead from this large welded pipe. It combines the features of hard, tough Alundum abrasive and the special resinoid bond developed by the Norton research laboratories to give a fast cutting action and a good finish.

16-P4T is the suggestion for this Norton cup wheel used to smooth up the flame-cut radius on these steel bars. Again the abrasive is fused alumina (Alundum) but the resinoid bond is of a slightly different formula to meet the different conditions; the grit size is slightly coarser and the grade softer because of the larger contact area of the cupwheel.

36-P5BE (No. 12 treated) is specified for the small wheel for this frame of aluminum—a material that is not easy to weld or grind. Here the fast cutting features of Alundum abrasive are combined with the cool cutting action of the patented Norton B-E vitrified bond — plus a special filler treatment to prevent wheel loading.

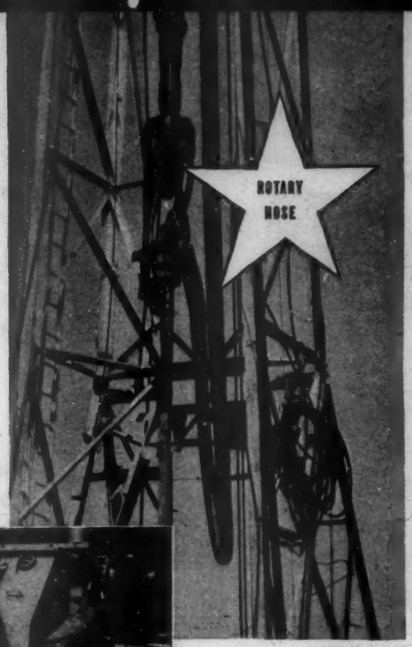
Your grinding jobs may not be similar to any of these but Norton abrasive engineers will be glad to study them and recommend wheels that will meet your conditions—that will speed production on your jobs.

NORTON COMPANY
Worcester, Mass.

W-884

NORTON ABRASIVES

The Complete Thermoid Line



AIR HOSE

PACKINGS • STUFFING BOX RINGS

STEAM AND REFINERY HOSE

covers ALL your needs in rubber products and friction materials

The *complete* line of Thermoid Products makes your purchasing job easier, because Thermoid manufactures one of the most complete lines of industrial rubber and friction products in the United States.

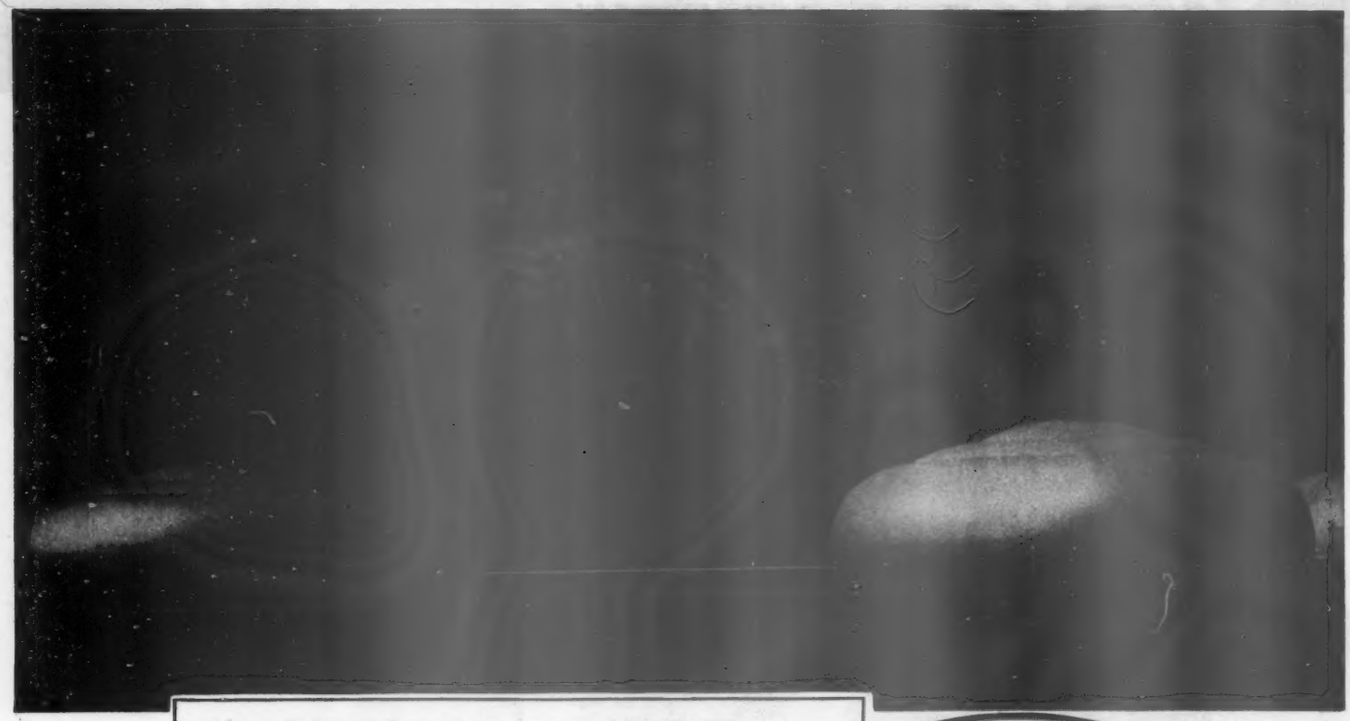
Behind every one of these Thermoid Products is the practical experience of Thermoid engineers and manufacturing specialists . . . Over sixty years of making good products better, and perfecting new products for new requirements.

OILMEN KNOW THEY CAN RELY ON Thermoid

Whether they need hose, belting, packing or brake lining . . . Oilmen know they can rely on Thermoid to get the job done—and done RIGHT. The extra performance built into Thermoid products counts double, these wartime days!

Thermoid

PRODUCTS FOR THE OIL INDUSTRY
DISTRIBUTED IN ALL OIL FIELDS BY
OIL WELL SUPPLY COMPANY



PROTECT THE TANKS THAT KEEP THE TANKS Rolling

RUST-BAN

Reg. U. S. Pat. Off.

"Conquers Corrosion"

One of the vital links in the production chain supporting the tanks and other mechanized equipment that is carrying America's fight to the Axis, are the petroleum industry's storage tanks. The protection of this tankage against corrosion has always been a matter of economic importance, but today with every ounce of steel desperately needed for the manufacture of weapons of war such protection has become a patriotic necessity. And this protection must include not only tanks but every article of iron and steel used in the production, refining and transportation of petroleum.

RUST-BAN*, the most complete line of rust preventives on the market, has been the choice of maintenance men in the oil industry for many years. It has met and conquered rust under practically every service condition known to man. It has proved its ability to PROTECT the oil industry's equipment.

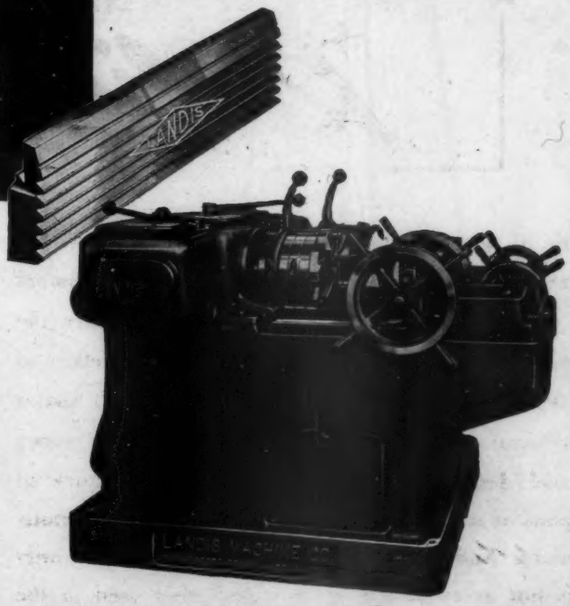
If you are plagued by the rust menace, a call or letter to your nearest RUST-BAN* marketer will bring out his corps of service engineers and corrosion experts. Their surveys and recommendations are yours for no cost. Their answers to your corrosion problems will keep your equipment on the line for the duration.

*Reg. U. S. Pat. Off.

RUST-BAN IS SOLD: In New York and New England by *Colonial Beacon Oil Co.*, New York City • In Pennsylvania by *Standard Oil Co. of Pennsylvania*, Philadelphia, Pa. • In New Jersey, Delaware, Maryland, District of Columbia, Virginia, West Virginia, North Carolina and South Carolina by *Standard Oil Company of New Jersey*, New York City • In Arkansas, Louisiana, Tennessee by *Standard Oil Company of Louisiana*, New Orleans, La. • In Texas and New Mexico by *Humble Oil & Refining Co.*, Houston, Texas • In Oklahoma and Kansas and parts of Missouri by *The Carter Oil Company*, Tulsa, Oklahoma • In Kentucky, Georgia, Florida, Alabama and Mississippi by *Standard Oil Company (Ky.)*, Louisville, Kentucky • In other states by *Penola Inc.*, Pittsburgh, Pa. • In Canada by *Imperial Oil Ltd.*, Toronto, Canada.

★ In WAR as in PEACE

LANDIS
Leads
In
Quality
Accuracy
Performance



For 40 years Landis has maintained a standard of quality, accuracy and performance accepted by industry throughout the world. Today LANDMACO Threading Machines, Die Heads and Chasers are daily setting performance records in cutting—with precision accuracy—the countless threads employed in the assembly and operation of Diesel Engines, Aircraft, Ships, Tanks, Guns and other implements of war.

Write for Bulletin No. H 75 descriptive of the LANDMACO Threading Machine

LANDIS MACHINE CO.
WAYNESBORO, PENNA.

LANDIS

REPRESENTED IN THE DOMESTIC OIL FIELDS BY:
Colcord-Wright Machinery & Supply Co., St. Louis, Mo.; C. J. Harter Machinery, Houston, Texas; Murray-Baker-Frederic, Inc., New Orleans, La.; Moore Machinery Co., Los Angeles and San Francisco, Calif.; Hendrie & Bolthoff Mfg. & Supply Co., Denver, Colo.

DOW CAUSTIC SODA

THE UNIVERSALLY USEFUL CHEMICAL

OIL FOR THE LAMPS OF LIBERTY!

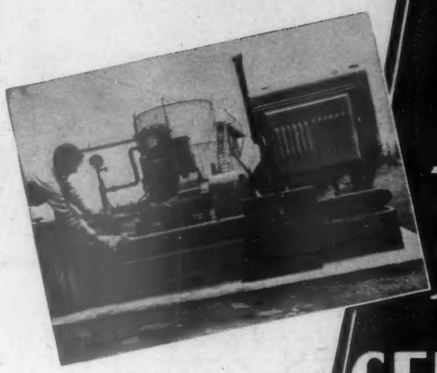
PROVIDING FUEL for our planes, ships, tanks and trucks is a vital contribution to the success of our fight for freedom. It's a man-sized job, too, that is being accomplished with the help of Caustic Soda.

Recognizing the urgent need for still larger quantities of Caustic Soda of *highest quality* and *consistent uniformity*, Dow has provided production facilities in carefully chosen areas. Thus exceptional availability is another reason why Dow Caustic Soda is highly favored. It is a factor that is proving advantageous, not only to Refiners, but to all industries that use this universally useful chemical.

Dow

THE DOW CHEMICAL COMPANY
MIDLAND, MICHIGAN

New York St. Louis Chicago Houston
San Francisco Los Angeles Seattle



Small Kobe Central Power Plant Pumping three 5,000' wells on 40-acre spacing.

for Modern CENTRAL POWER Advantages

FIG. 2

Kobe Central Power Plant producing approximately 20 barrels a day from 10 wells with pump settings at 3,500 feet.

Pumping one or thirty wells from 2,000 or 10,000 feet, for small or large volumes and from one central plant, is being done by more and more operators every day.

Kobe Multiple Pumping combines all the advantages of the old central power with those of individual well pumping, and adds many new features . . . such as large savings in critical materials, lower installation and operating costs, closer individual well control, high operating efficiencies, etc. . . . and, at the same time, removes depth, volume and spacing as limiting factors to such group operations.

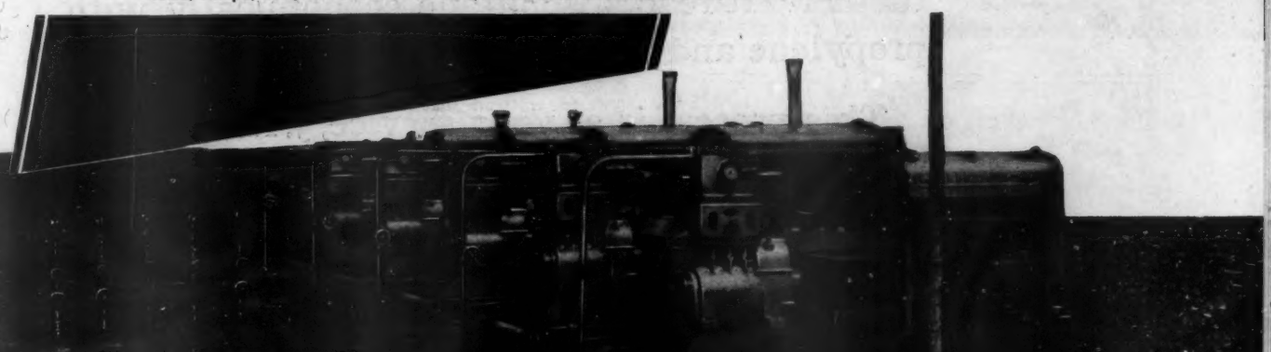
This revolution in pumping practice has been made possible by the *fluid horsepower* of the Kobe System . . . which easily and efficiently can be distributed through small pipe from one central plant to pumps in many wells, regardless of depth. When required for new wells, horsepower can be doubled or tripled by adding complementary power units as shown in Fig. 3.

Every day more and more leases are being equipped for Kobe pumping. Check the advantages of this *new* pumping system *now* as it applies to your equipment and production needs. A call to the nearest Kobe representative will bring you information promptly and without obligation.

K O B E, *Incorporated*
(Pronounced KŌB)

HUNTINGTON PARK, CALIFORNIA

Mid-Continent Offices & Shop: Oklahoma City, Okla. *Export Office:* 30 Rockefeller Plaza, New York, N.Y.
District Offices: Huntington Park, California. Oklahoma City, Tulsa and Seminole, Okla. Houston, Dallas, Odessa, Pampa, Longview and Wichita Falls, Texas. Great Bend, Kansas. Mt. Vernon, Illinois.



Kobe Large Horsepower Central Plant pumping more than 3,000 barrels of fluid a day from 5 wells with pump settings at 5,000 feet.

KOBE

KRAULIC PUMPING SYSTEMS KOBE

You can use pentylenes

Here is a question which was published in the September 10, 1942 issue of Oil and Gas Journal:

> As cracking plant operators we have been wondering why pentylenes could not be substituted for butylenes in the manufacture of the alkylates needed so much for 100-octane gasoline What is wrong with the use of pentylenes for this purpose?—J. A. B.

Here is the answer:

There is nothing wrong with using pentylenes for alkylation

The Universal hydrogen fluoride process is the way to do it This process economically reacts isobutane with butylenes and it goes further It reacts isobutane economically with propylene and pentylenes, too

This process is at your service, J. A. B. and at the service of all other refiners, too — under license from Universal

OIL IS AMMUNITION—USE IT WISELY

Universal Oil Products Co
Chicago, Illinois

Dubbs Cracking Process
Owner and Licensor

THE REFINERS INSTITUTE OF PETROLEUM TECHNOLOGY

Keep the Oil Flowing

PROPER SERVICE
Will Add Months to the Life of Your
INTERNATIONALS

CARE, OPERATION, ADJUSTMENT

Fuel, Oil, Lubricants—Store in clean, covered containers; use only clean fuel, oil, lubricants of high quality and correct grade.

Air, Fuel Cleaners—Clean regularly.

Oil, Diesel Fuel (on Diesel models) Filters—Clean regularly; replace filter elements every 100-120 hours of operation.

Oil Screen—Clean whenever oil pan is removed.

Gasoline Strainer—Clean at least once a month.

Oil Change—Every 100-120 hours of operation.

Carburetor—Remove, clean fuel screen occasionally; check fuel bowl cover screws regularly—keep them tight.

Magneto—See instructions in operator's manual on lubrication, distributor, adjusting points, timing, etc.

Cooling System—Always use clean water; clean regularly; adjust fan belt regularly for correct tension; replace fan belt when badly worn; keep water pump packing nut tight enough to stop leaks; install new packing when needed.

Spark Plugs—Remove, inspect, clean every 200-300 hours of operation.

Clutch—Inspect regularly to maintain correct clearance between throw-out bearing and release fingers.

Storing, Housing—Keep engine in dry, protected place when not in use.

Read, study operator's manual for other money-saving suggestions.

MAINTENANCE

Sleeves, Pistons—If and when replacement is needed, matched sets can be quickly, easily installed.

Fuel Injection Pump (on Diesel engines)—Entire unit can be replaced easily. Always use clean fuel oil.

Crankshaft Bearings—Replace when needed; no fitting or reaming necessary.

Valve Grinding—As needed.

FOR VICTORY, oil must keep flowing, engines must keep pumping. Proper care and operation of engines is of vital importance because new ones are harder and harder to get.

This is a responsibility that you and the International Industrial Power dealer and his servicemen must work out and share together to get maximum production from your International Power Units.

Make use of the International dealer's broad, over-all knowledge of oil field equipment, methods, and power applications. Rely on his servicemen's training to keep your equipment operating efficiently. Add the experience of the International Harvester branch organization to your own. Then you've got a combination working together with one aim: TO KEEP YOUR EQUIPMENT ON THE JOB LONGER. Teamwork will *take care of it and make it do.*

It is sound, smart business to have your International Power Units inspected and serviced regularly. Hard work and long hours are no hardship for Internationals that are well cared for.

INTERNATIONAL HARVESTER COMPANY
180 North Michigan Avenue Chicago, Illinois

International Power Units

● Sizes up to 110 h. p. for gasoline, natural gas, distillate and Diesel operation. Dependable power for: **Oil Well Pumping, Pulling Rods and Tubing, Rotary Drilling, Cable Tool Drilling, Spudding, Core Drilling, Pipe Line Pumping, Pipe Line Welders, Water Well Pumping, Waste Water Pumping, Lighting Systems, Machine Shops**

Planning to help make rubber ?

ask B&W

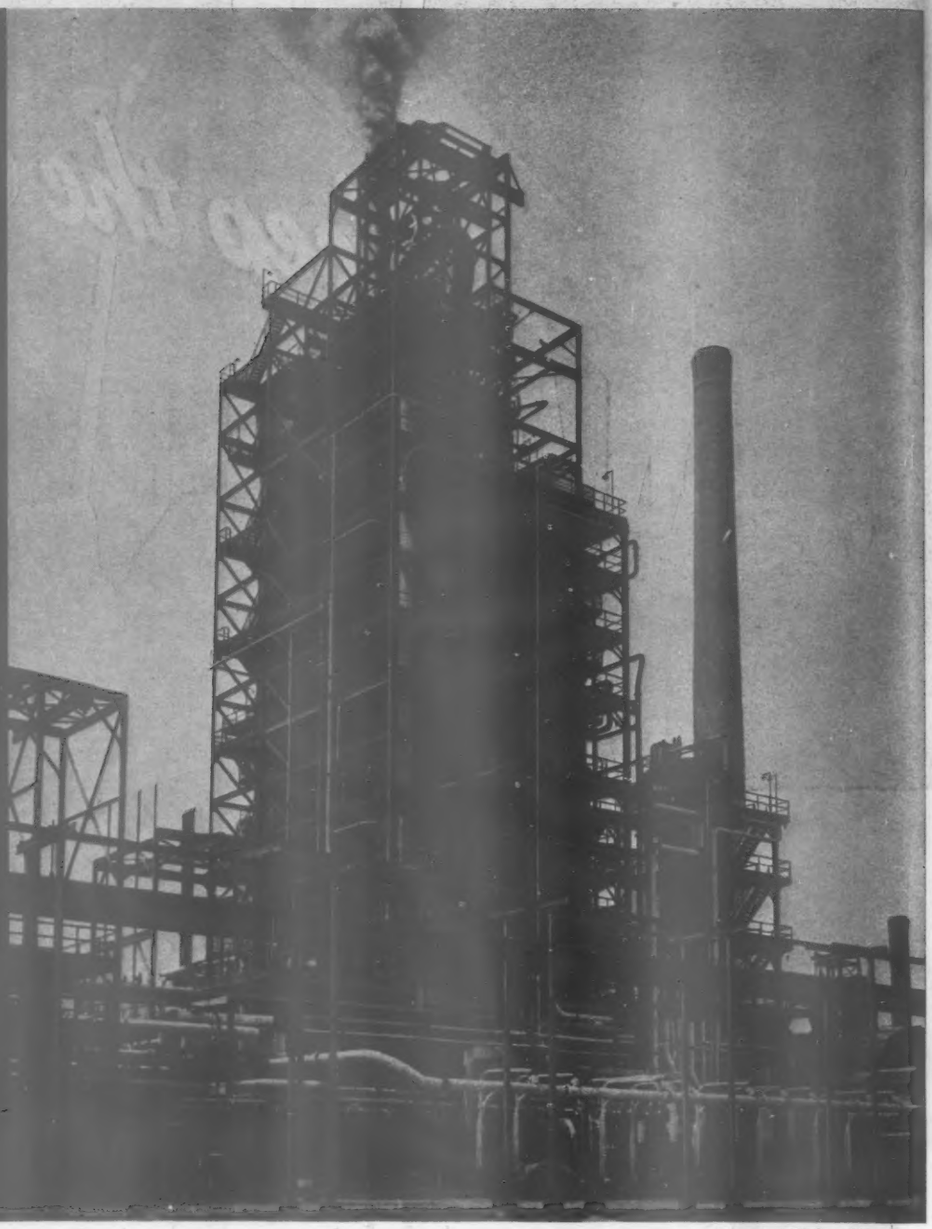


Photo courtesy of Standard Oil Co., of New Jersey

Already, B&W engineers have assisted in the design and construction of several plants for the production of synthetic rubber ingredients. Last year, B&W completed and published 157-page Technical Bulletin No. 6-D, "Properties of Carbon and Alloy Steel Tubing for High Temperature — High Pressure Service". And in the wide range of B&W Croloys are analyses that meet all needs for seamless alloy tubing in the production of butadiene, styrene, and other refinery products for synthetic rubber manufacture.

Hence B&W is the logical source of tube information for refiners planning new construction or plant conversion to meet requirements for rubber.

Write on your business letterhead for a copy of Bulletin No. 6-D now; then ask B&W engineers for specific recommendations on your individual requirements.

BABCOCK & WILCOX TUBES

HOT FINISHED
COLD DRAWN

ALLOY STEELS
CARBON STEELS

THE BABCOCK & WILCOX TUBE COMPANY
BEAVER FALLS, PA.

TA-1211

OIL and JOURNAL EDITION

BAASH ROSS News

BAASH-ROSS TOOL COMPANY - LOS ANGELES - HOUSTON - NEW YORK

A BULLETIN COVERING NEWS OF EQUIPMENT AND OPERATIONS IN THE PETROLEUM INDUSTRY

YOU CAN'T BEAT THESE BUYS *ANYWHERE* TODAY

These are the greatest values EVER offered . . . *and here's why!*

The best buy you can possibly make *anywhere* today is U.S. War Bonds and Stamps.

That's not flag-waving. It's common horse-sense. Leaving out all the important—but intangible—factors such as patriotism, love of country, etc., let's look at Bond buying from the cold-fact business standpoint . . .

We're in a war. We've GOT to win that war or we lose everything we have . . . our homes, our jobs, our country, *our freedom*. To win, our men must have the finest war equipment we can give them—*and plenty of it!* That equipment has to be bought and paid for by *all* of us. There are two ways to pay for it—by borrowing the money, or by taxation. All that our government can't raise by borrowing, it *must* raise by immediate taxation.

Now here's the question . . . would you rather *lend* your money to the government and get all of it back in 10 years *with a 25% bonus* . . . or would you rather *pay* it out in still greater taxes now, and get *none* of it back?

It's up to all of us. The more Bonds we buy, the lower our tax load will be. And only with Bonds do we get our money back, *plus interest!*

That's why we say . . . U.S. War Bonds and Stamps are the best buy any of us can make today. Make the most of it!

WAR BONDS—Sold to you now at 25% discount. Redeemable in 10 years at *full* face value. The ideal way to put aside funds for education, home, travel, after the war.

WAR STAMPS—Buy these with your pocket money—10c, 25c, 50c, $1, $5. Can be changed into War Bonds which return $4 for every $3 you invest. A Buy!

a fightin', enemy-smashing

JEEP only $900 in War Bonds

Here's a hell-for-leather, scrappin' fool if there ever was one. It'll pull a cannon, haul men, or climb a precipice. You can buy it for less than you spend on the family jalopy . . . and it will do *you* and your country a lot more good right now. Invest in one of these *today* and run down a Jap!

save a battalion for $18 in War Bonds

FIELD SERVICE TELEPHONE

Think what the "Lost Battalion" of World War I would have given for just *one* of these. Why not pass up that week-end trip you were planning and put the money into insuring foolproof communications for our men? You'll save rubber, too!

Another Special—Pursuit Plane, in War Bonds.....$50,000

buy protection!

LATEST TYPE GAS MASK

only $9 in War Stamps!

Less than you'd spend for a good felt hat . . . and a whale of a lot better protection for one of our boys. Wear your old felt another year and save a life *this* year! Buy this special today!

a steal! send a message to Tojo with an

ANTI-TANK SHELL

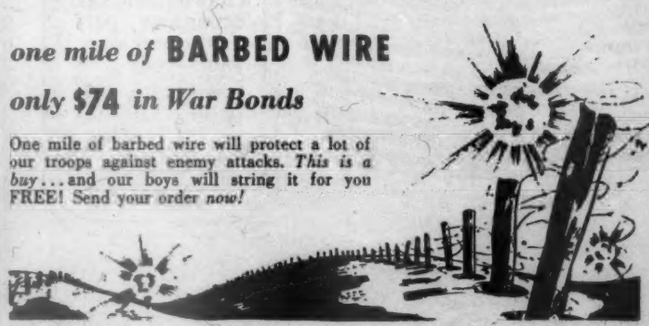
. . . only $6 in War Stamps!

Delivery is free to any point in the Axis. Give our men plenty of these. They know how to use them . . . and it takes only *one* in the right place to stop an enemy tank. ***A sure-fire special!***

one mile of **BARBED WIRE**

only $74 in War Bonds

One mile of barbed wire will protect a lot of our troops against enemy attacks. *This is a buy* . . . and our boys will string it for you FREE! Send your order *now!*



WHERE TO BUY . . .

These special buys—and a lot of others just as good—are on sale at your nearest post office, bank, theater, department store or other Bond and War Stamp station. Help knock Hitler, Hirohito and Co. on their Axis.

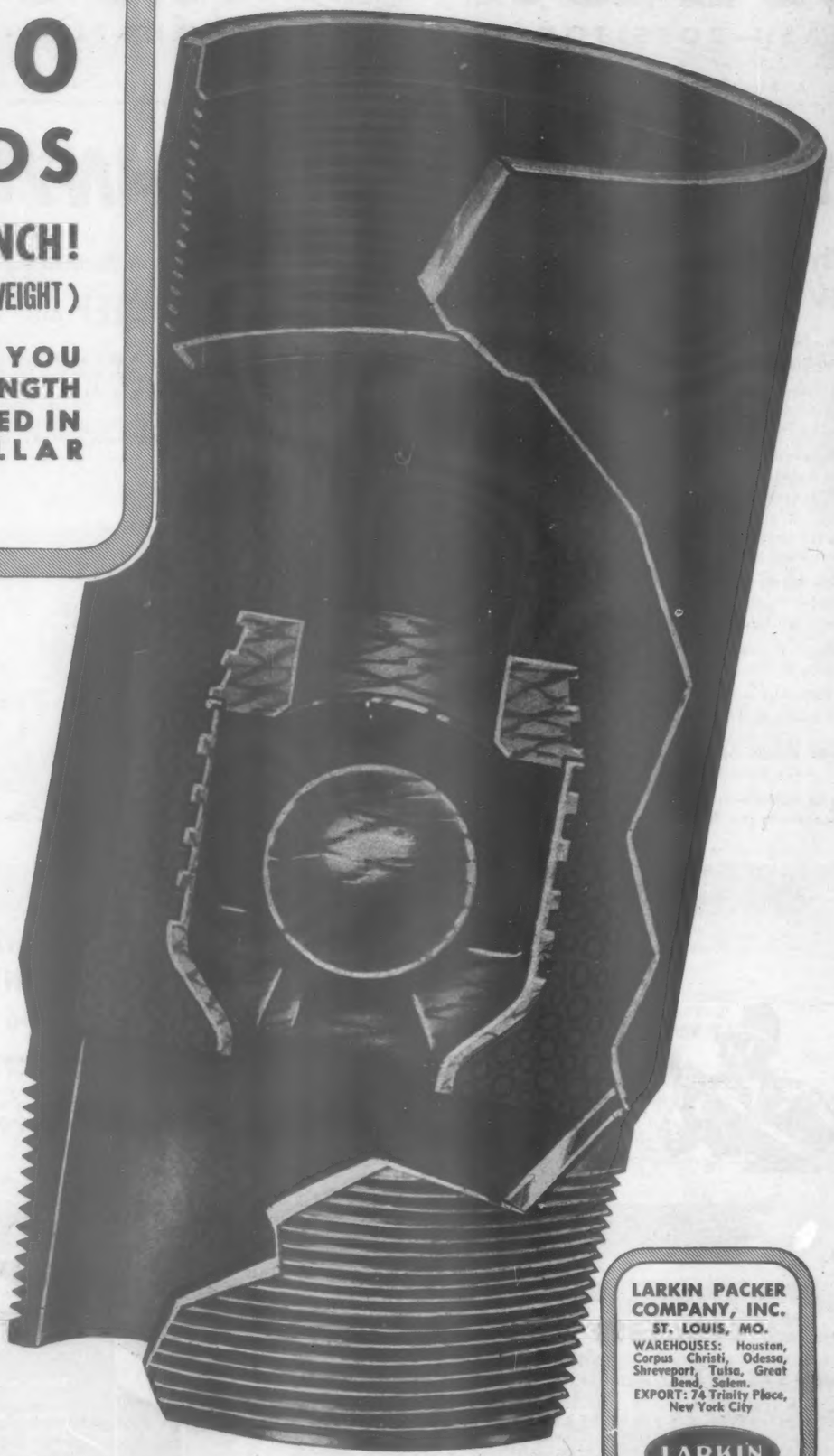
BUY BONDS! BUY STAMPS! AS MANY AS YOU CAN, AS OFTEN AS YOU CAN!

7400 POUNDS

PER SQUARE INCH!

(228,000 LBS. TOTAL WEIGHT)

LARKIN GIVES YOU FAR GREATER STRENGTH THAN YOU'LL NEED IN A FLOAT COLLAR



In recent tests made for oil company engineers the new Larkin Valve withstood cold water pressures of 7400 pounds per square inch. The machined and lapped ball-type valve seated perfectly at the first application of pressure and there was no leakage until destruction.

The tremendous strength proved by the tests can best be understood by the following comparisons:

1. A 7400-pound test exceeds the ultimate bursting pressure (7383 pounds) of 7-inch 20-pound Grade D Seamless Casing.
2. There is a safety factor here of 2⅝ times A.P.I. Test Pressure.
3. At 7400 pounds per square inch there is equivalent to 114 tons weight on the 7-inch valve assembly.

The new Larkin Valve is the safest for the deep wells of today. Larkin has consistently built better cementing equipment at no premium in price.

LARKIN PACKER COMPANY, INC.
ST. LOUIS, MO.
WAREHOUSES: Houston, Corpus Christi, Odessa, Shreveport, Tulsa, Great Bend, Salem.
EXPORT: 74 Trinity Place, New York City

LARKIN

REDUCE ENGINE MAINTENANCE to a "Simple Field Service Job"

FAIRBANKS-MORSE ZC ENGINES

- **NO SKILLED LABOR NEEDED**—Simplicity of design and accessibility of working parts makes it an easy job for the ordinary field man to service or repair the Fairbanks-Morse ZC Engine.
- **NO MACHINE SHOP NEEDED**—There is no need for a machine shop—the Fairbanks-Morse ZC can be completely serviced in the field, a saving in both time and transportation.
- **PARTS READILY AVAILABLE**—With proper care, the Fairbanks-Morse ZC Engine rarely needs a replacement part . . . however, when parts are needed they are readily available in all Continental stores.
- **DEPENDABLE AND DURABLE**—Engineered to run 24 hours a day—service is reduced to an occasional field adjustment.

The Fairbanks-Morse ZC Engine is truly an outstanding performer. Its simplicity will amaze you, making it a sure cure for today's maintenance headaches.

If you have any kind of a power problem check up on the Fairbanks-Morse Engine. There is a size to fit practically every requirement. Immediate deliveries can be made from stock. Ask your neighbor about his ZC Engines and you will readily learn how to reduce maintenance to a *Simple Field Service Job.*

Buy **U. S. WAR BONDS & STAMPS**

THE CONTINENTAL SUPPLY COMPANY
General Offices: DALLAS, TEXAS
Foreign Sales Subsidiary
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30 Rockefeller Plaza New York City, N. Y.
Representatives:
LONDON MARACAIBO BUENOS AIRES TRINIDAD

30th ANNIVERSARY 1942 CONTINENTAL SUPPLY CO.

CONTINENTAL

SERVING THE OIL AND GAS INDUSTRIES

ONLY 32 TOOTH PASTE TUBES

will furnish Tin for

ONE PLANE!

You CAN DO YOUR PART
BY SALVAGING YOUR SCRAP

Only 32 tooth paste or shaving cream tubes — yet the lack of the tin in this many tubes could hold up production on an airplane.

Tin is scarce and it is vital not only in the manufacture of planes but of innumerable other war products. Not only is tin urgently needed, but scrap in all forms to make aerial bombs, guns, tanks, ships . . . every tool and implement to fight an all-out war.

For example, 1,000 pounds of scrap added to the same amount of pig iron will make eight 250-pound bombs. A derrick, weighing approximately 15 tons, will make a medium size tank.

Turn in your scrap *now* and thus help give the boys at the front the materials they so vitally need to knock out the Axis.

TURN IN YOUR SCRAP TO WIN THE SCRAP!

Worth Fighting For

Anybody who has been privileged to enjoy even one day of America's 166 years of glorious freedom knows well what we're fighting for. But we thought we'd just go out and take a picture of it.

You're looking at civilization at its peak. In these bright-eyed little shavers we offer proof sufficient that America's 166 years of pioneering, planning, toiling, studying, building, fighting, has not been wasted. Not one minute of it! Yes, here are two living symbols of what Americans in every corner of the globe today are fighting for . . . what Americans at home are working for . . . what every American would gladly die for. They're that high standard of living, that great privileged class America has so proudly achieved. They hold the America of tomorrow in their hands. Look at the appreciation in their eyes for a protection of their freedom. Their smile is thanks enough. We truly hope they, too, will never have to fight for it, but we know they'd jump at the chance.

Yes, they're the prizes our boys went away to fight for, will win for, and come home to. America will win. Her stakes are too well worth fighting for!

THE PARKERSBURG RIG & REEL CO.
PARKERSBURG, W. VA.
DALLAS HOUSTON TULSA
LOS ANGELES NEW YORK

PARKERSBURG

INCLUDE THEM IN YOUR MACHINERY DESIGNS

Drilling Rig Drives (guards removed). Draw Works has 8 forward and 2 reverse speeds.

● For a quarter of a century oil field machinery development has been rapid—successive models of rigs, pumping and servicing units outstripping previous ones regularly. With this rapid development has come an ever-increasing usage of Diamond Roller Chains until today this power transmission has become the accepted standard.

Engineers and machinery builders, and the production men in the field, too—have had ample proof of the value of Diamond power transmission and recognize Diamond Chain engineers for their wide knowledge of oil field machinery problems.

The rough and tough jobs are no problem for Diamond Roller Chains. They transfer power surely and with ample reserve to withstand shock loads. There is no slide, slip or friction. The driving effort is spread over many teeth—and there is no separating force to put strains on bearings. Hundreas of oil films between the file-hard finely finished pins, bushings and rollers absorb shocks and add to the smoothness and life of the drive.

For greater flexibility, longer satisfactory performance, less maintenance, follow the practice of leading machinery builders,—use Diamond Roller Chains for power transmission. DIAMOND CHAIN & MFG. CO., 475 Kentucky Avenue, Indianapolis, Indiana. Tulsa Office: 2238 Terwilleger Blvd.

DIAMOND ROLLER CHAINS

To MORE Adequately Serve the WAR NEEDS

WITH WARREN'S NATURAL GASOLINE, BUTANE, ISO-BUTANE AND PROPANE

WARREN'S New NATURAL GASOLINE PLANT at Crossville, Illinois

To better meet the growing demands of our war-time and industrial requirements for Stabilized Natural Gasoline, Butane, Iso-Butane and Propane, Warren takes pride in announcing the completion of its new Natural Gasoline plant at Crossville, Illinois.

Supplementing present Illinois facilities and strategically located to serve an important market, this new plant insures a dependable supply and quick delivery.

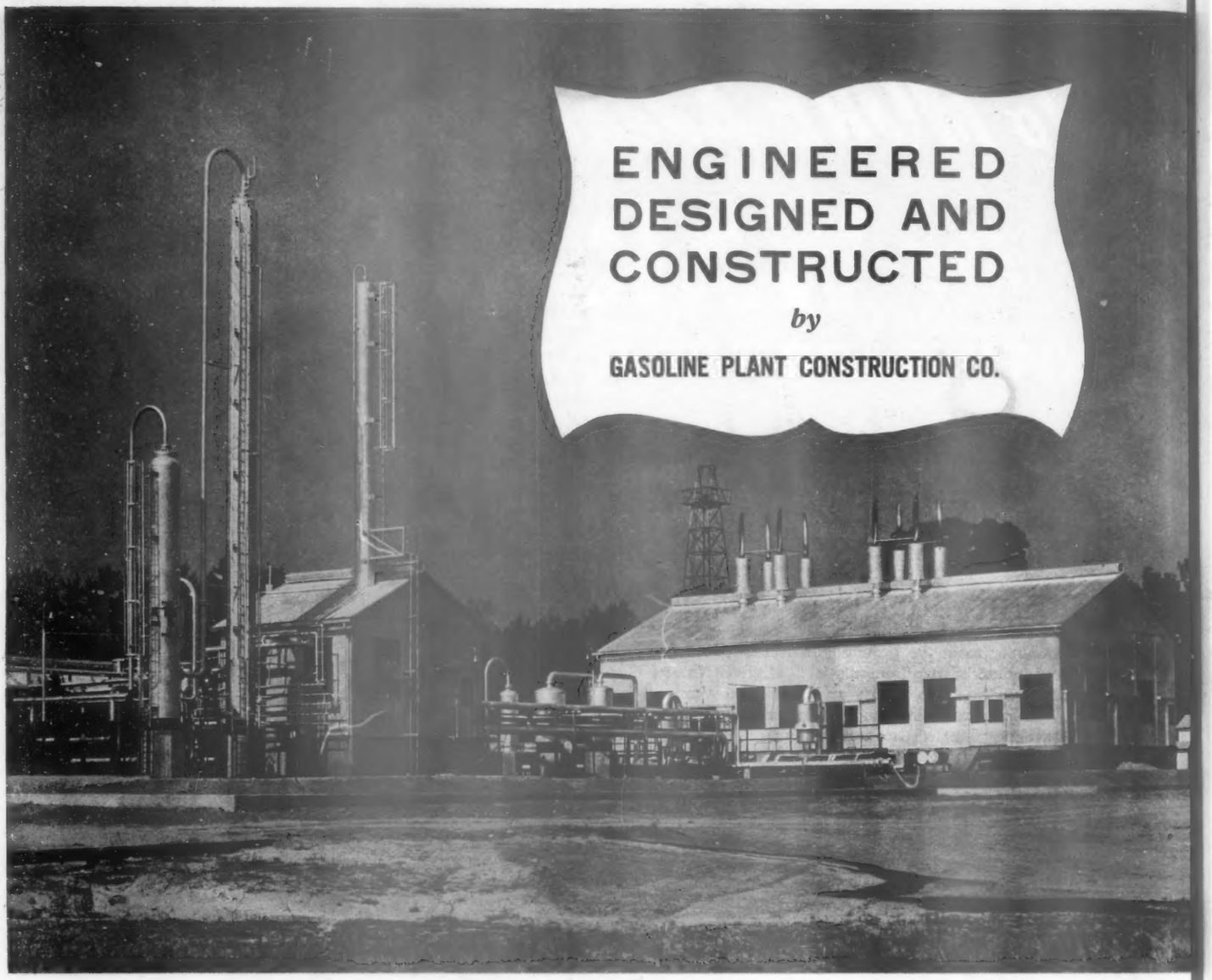
The Crossville plant is the tenth Natural Gasoline plant owned and operated by the Warren Petroleum Corporation.

WARREN PETROLEUM CORPORATION

Manufacturers, Exporters and Marketers of Natural Gasoline and Liquefied Petroleum Gas

Tulsa, Oklahoma

Export Terminals: Corpus Christi, Port Arthur and Norsworthy, Houston, Texas, Lake Charles, La., and Marcus Hook, Pa.



Warren Petroleum Corporation

Griffin, Ind., Plant

For Compressor Station for Repressuring System
with
Absorption and Dehydration of gas at 750 pounds pressure

GASOLINE PLANT CONSTRUCTION COMPANY

713 Second National Bank Building

HOUSTON, TEXAS

HEAD IT FOR THE LAST . . .

"Round-up"

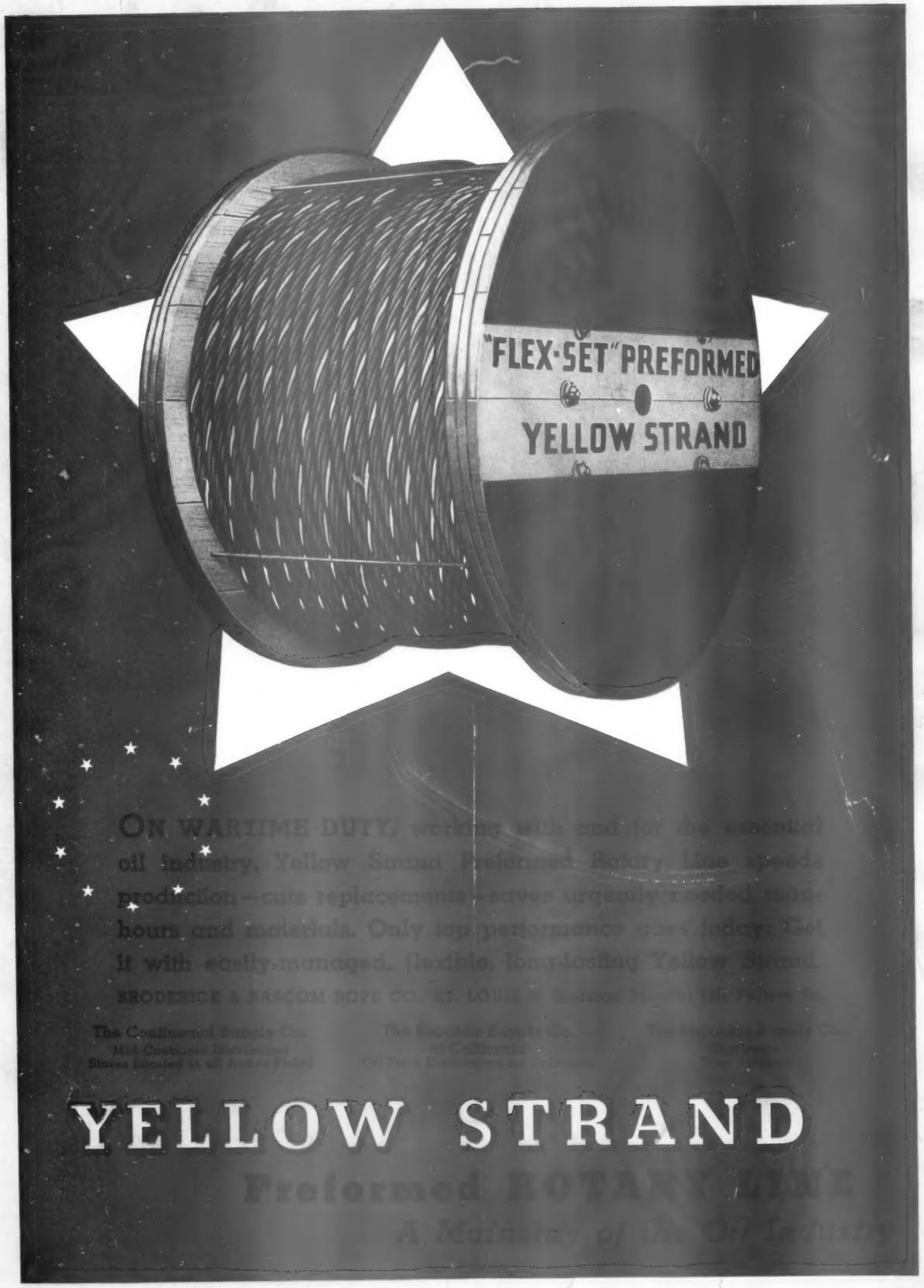
AMERICA is engaged in the biggest round-up of all history -- a round-up of junk for conversion to war materials.

Yet millions of tons of idle metal are still in hiding, in spite of this nation-wide campaign. Some of it may be in your home, or factory, or warehouse Worn-out machinery, pipe, wire, sheet metal, odds and ends -- all, converted to scrap, will go to produce more than double their own weight in prime fighting steel.

To collect the 6,000,000 EXTRA tons of scrap steel that our war needs dictate, means that YOU and every other citizen must contribute every pound of useless metal you can corral.

Don't fail Uncle Sam in this drive. Get out YOUR scrap. Start it on its way. Head it for its last round-up.

THE YOUNGSTOWN SHEET AND TUBE COMPANY
YOUNGSTOWN, OHIO

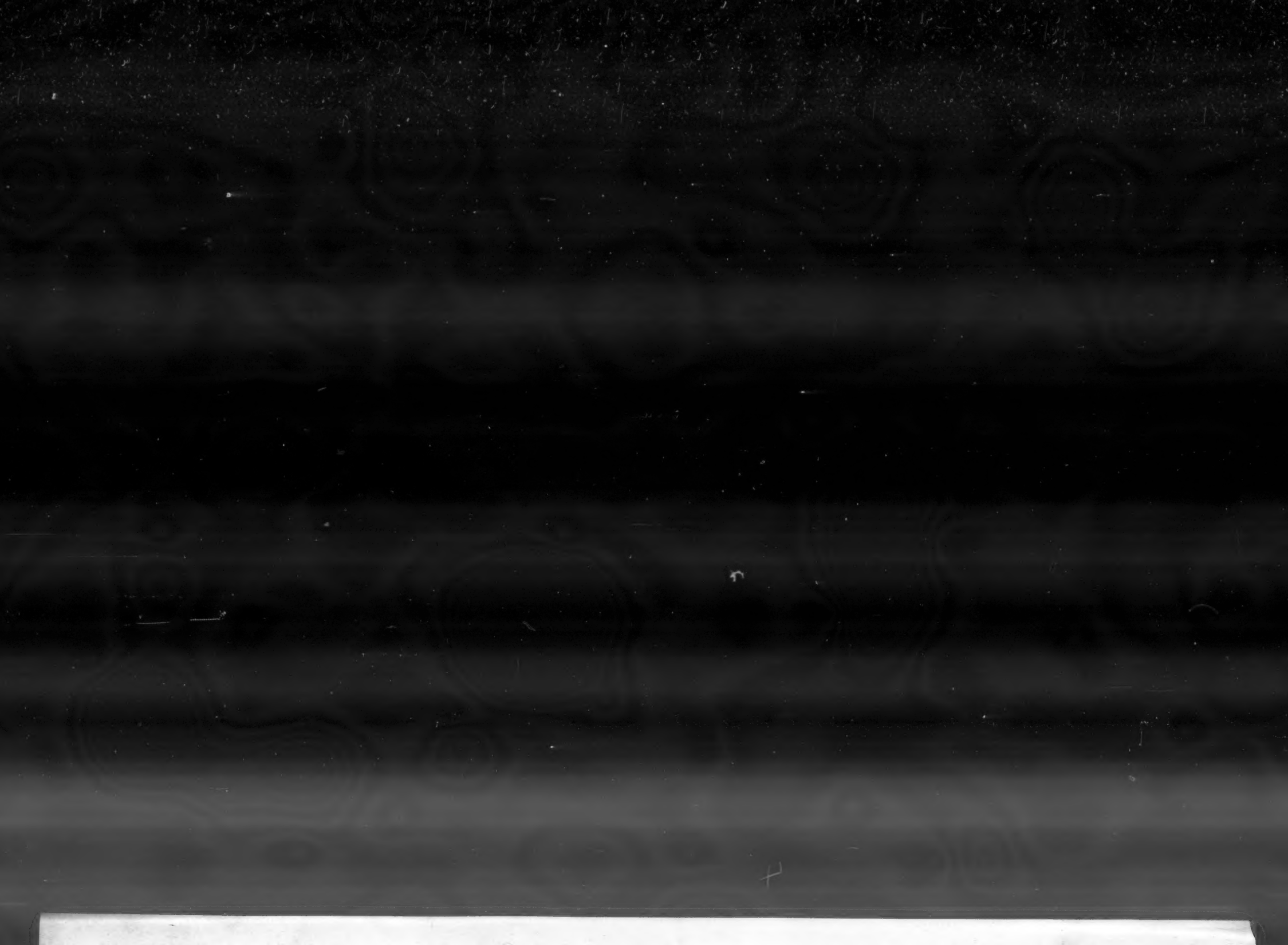


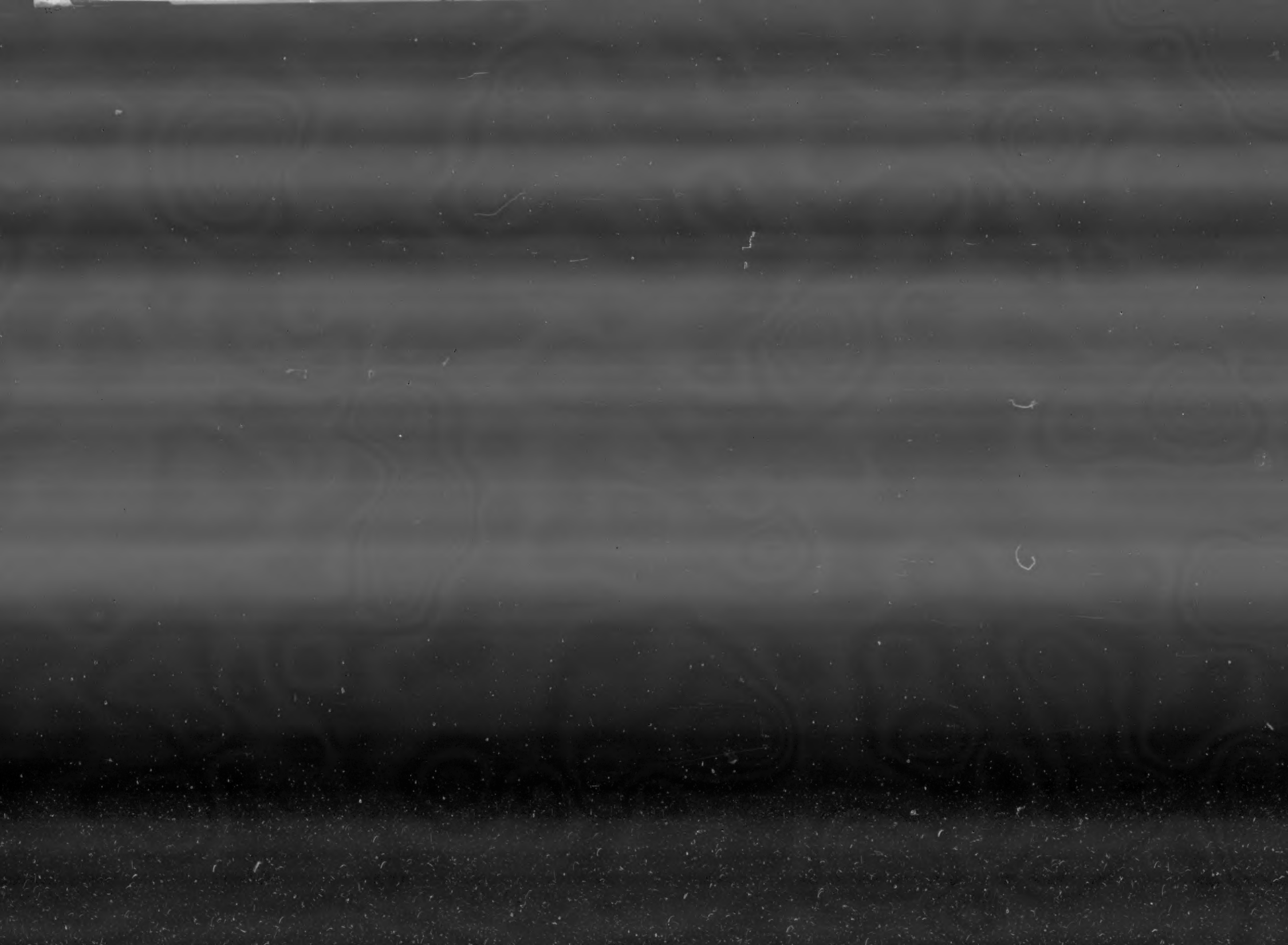
ON WARTIME DUTY, working with and for the essential oil industry, Yellow Strand Preformed Rotary Line speeds production—cuts replacements—serves urgently needed man-hours and materials. Only top performance goes today. Get it with easily-managed, flexible, long-lasting Yellow Strand.

PRODUCED BY BROWN ROPE CO. AT LOUISVILLE, KENTUCKY

The Continental Supply Co.
Mid-Continent Distributors
Stocks Located in all Active Fields

YELLOW STRAND





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. . . in its most important meeting in its history . . . when oil industry engineers and executives will give the results of intensive, thoughtful study to problems helpful to winning the war. Immeasurable benefits to our government in its all-out war effort are sure to accrue from these discussions and studies.

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HUMBLE ROAD HOUSTON, TEXAS

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